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An Address.[1]

By PERCIVAL T. S. CHERRY, M.B., B.S.,

Retiring President of the South Australian Branch of the British Medical Association.

IN some parts of Australia the President of the local Branch of the British Medical Association gives his address when he takes up the reins of office. In South Australia, however, it has been the custom in the past for the retiring President to deliver an address. This to my mind is the preferable method, because at the end of his term the President not only has more confidence, but is in a position to tell the members what has been going on during the past twelve months. The selection of the subject is entirely in the speaker's hands—it is not chosen for him. Previous holders of the distinguished office have sometimes chosen either a scientific theme or one of current or historical interest. Tonight, however, I am, I think, departing from the usual custom, and wish to dwell upon the events which have come up for the council's consideration during my term of office.

To my mind the presidential address is somewhat akin to the annual report of the headmaster of a large school, where, although the doings of the institution are well known to the staff, the parents and pupils hear an account of the year's work from the headmaster himself. The analogy is almost exact, because, although the members of the council are cognizant of the work of the Branch, the ordinary members as a whole feel, I understand, that they are often left in the dark as to what the council has accomplished or endeavoured to do for them.

[1] Read at the annual meeting of the South Australian Branch of the British Medical Association on June 28, 1939.

As a general practitioner, which you probably know I have been solely all my professional life, I know that there is often a feeling, both in the metropolitan and country areas, that the local Branch is run from North Terrace. So it is; but so is your State Parliament and so are other public services controlled from the city.

However true this may be, I can assure you that the council is always treating matters from a general point of view, city, suburban or country, and all members have had equal consideration. Sometimes the country man feels that he is forgotten. If he thinks so, it is probably his own fault. Under the new rules there will be provision for two country members on the council, one elected alternately each year. In the past, however, the council itself has endeavoured to have country representation. The nomination of the rural members has rarely come from the country practitioners; the council itself has approached the individual and secured his nomination. If members are apathetic in their nomination of representatives, why grumble when events happen that are not perhaps to their satisfaction? Quite recently the council was asked to nominate a representative on the new Federal Contract Practice Committee. In some of the other States the council did this itself, but here we preferred to allow the Branch to nominate its choice. Accordingly the matter was referred to a special general meeting, which endorsed a postal vote for the purpose, thus enabling every member, metropolitan or country, to exercise his franchise. To the council's dismay the postal vote was availed of by only about 50% of the members, both in the city and country. Such apathy is indeed deplorable.

The council during the past year has consisted of thirteen members. Ten of these have had extensive experience in general and contract practice, and seven of these ten have had country practices. Is it not likely, then, that the council would do all in its power for the benefit of all its members, the majority of whom are in general practice, whether it be in the metropolitan or country areas? The council, composed as it is, was elected by the members at the annual general meeting, except, of course, the two Federal delegates, who were chosen constitutionally by the council; and yet one frequently hears that the council is in danger of a vote of censure or no confidence for the way that the affairs of the Branch have been managed.

From past experience I can assure you that the work of the council is no sinecure. The scientific side of the Branch is endangered by the mass of general business to be done. However, it should be every member's duty to do what he can for the Branch as a whole. Everyone cannot be a member of the council, but all can take an active interest in the election and support of the chosen few. The highest compliment that can be paid to one is to be elected President, and I can assure you that I have thoroughly appreciated the honour and tried my utmost to steer the ship safely through the past twelve months. To me the year of chairmanship and the other six years as a member of the council have been terms of pleasure and interest; and I have yet to find any member of the council who has served with me, who has fallen down on his job. The Federal Council, too, although composed of well-tried senior men, has had a vast experience of general practice and has always had the interests of the general practitioner at heart. In support of this it asked that the Federal Council should be augmented as a Federal Insurance Committee by the addition of a general practitioner from each State (each elected by his own Branch). Further, when the State Insurance Committee was suggested, our two Federal members respectively moved and seconded that the local committee should consist of three members of the council (the President *ex officio* and two council general practitioners) and four others definitely engaged in contract practice, two being metropolitan and two rural, to be elected at a special general meeting of the Branch. This was done and the committee worked hard and late, especially on one night, when the *questionnaires* were examined, the meeting lasting until 3 a.m.

I referred just now to our monthly scientific meetings being endangered by the amount of the business work of the Branch. This year two of our monthly meetings were cancelled on account of sickness of the men chosen to give the papers. Fortunately the military authorities were able to help us out, and Major-General Downes gave us an instructive lecture on the modern medical requirements of warfare. We are much indebted both to him and to Colonel Burston for inviting us. The council has asked members to come forward with papers for our monthly meetings. Generally the council arranges the programme for the whole year and has had to approach doctors to give papers on subjects the choice of the council. Surely some members, either city or country, have at times a series of interesting cases which they would like to talk about at a meeting and have discussed for the benefit of all present. Personally, as chairman, I have been very disappointed at the attendance at scientific meetings, especially in comparison with that at special general meetings, when business and financial aspects of practice are the bone of contention. It is a poor compliment to the reader of a paper, which often takes several weeks of thought and preparation, that his audience is comparatively small, and of course the discussion proportionately decreased. There is really no excuse, because the programme is issued to members as early as possible in the year, the meeting is always on a fixed night in the month, and members could diarize from month to month. Let us hope that the meetings in the future will be better attended.

The annual report presented to you all tonight, although somewhat lengthy, is really only a brief summary of the council's activities throughout the year, and I propose now to enlarge on some of the items which especially concern the general prac-

titioner. First of all comes the matter of the intrusion upon our professional rights by somewhat kindred professions without the corresponding knowledge and training. I refer to the unfortunate treatment of the public by pharmacists and others with massage, electricity and the like. A country member reported a pharmacist to us for using electrotherapy, and the council immediately offered to take the matter up on the receipt of more definite details. Again, some suburban practitioners informed us that the practice of diagnosis and treatment by pharmacists was somewhat rife in their district; in one case a patient with early Paget's disease of the nipple was allegedly treated by a pharmacist with ointment until it was too late for the surgeon to do anything for a radical cure. The council elected a subcommittee to confer with the Pharmaceutical Society over the matter. A meeting was held and the Pharmaceutical Society members present promised that action against the alleged offender would be taken by them upon the receipt of his name from the doctor concerned.

We have also formed a subcommittee to investigate the practice of chiropody in South Australia. Both the Society of Chiropodists and the pharmaceutical chemists have requested the council to grant them recognition as regards the art and practice of foot culture *et cetera*. The council has communicated with the Parent Body of the British Medical Association to ascertain what degree of recognition is granted the chiropodists in the United Kingdom. The object of the delay is solely to protect the public and our own profession on the lines permitted at home, not purposely to thwart the others, because if we permit these people to do certain treatment without a very fine definition and limitation of the scope of their work, goodness only knows what really surgical privileges may be lost to us in the future.

Another matter that was brought before the council was the fact that the Mothers and Babies' Health Association was conducting in this city a training school and infant welfare hospital, known as "Torrens House". There was no objection to the existence of such a place, but, although it enjoyed a considerable government grant, we felt that patients of parents in a good position should be debarred from being inmates. The child's own doctor was not permitted to have anything to do with the case. Conferences were held between the council, Dr. Douglas McKay, our own Branch representative, and the Mothers and Babies' Health Association medical committee. We did not succeed over the income limit objection, but were able to get permission for the infants' own doctors to supervise any medical treatment. The reason we lost on the financial aspect was because the Government was partly paying for the expense, and so all taxpayers were considered to be eligible.

During the year the council was aproached by a country member for its direction to the Government that the law be altered for the procuring of abortion in the case of incest and rape. The present law does provide that where the life of the mother is in danger she can have an abortion induced, although the doctor performing the operation may, of course, have to face a charge. The law states that "Any person . . . who unlawfully uses an instrument" *et cetera*, and it seems evident that it was in the minds of those that framed the law that abortion was lawful in certain cases. Some members of the council held very strongly that the law ought to be altered in the case of incest and rape, but it did not necessarily follow that the council as a body should take any official action. Nor had the council ever been approached either by Parliament or the Crown Law Office, and as the machinery already existed to provide for abortion in certain cases the alteration of the law was not within the province of the council, and any move in this direction could be taken only after consultation with the members of the Branch. The oath of Hippocrates definitely states: "To no man for his asking will I give a deathly potion, nor will I devise counsel to that end. In like manner to no woman will I give a pessary that shall slay the fruit of her womb." Obviously "in like manner" means "for her asking". This seems to infer that circumstances may have arisen in those ancient Greek times in which abortion was permissible, but not for the woman simply asking for the untimely cessation of her pregnancy.

In the interests of public health Dr. Darcy Cowan recently drew our attention to the need for the Federal Government to grant interim pensions to sufferers from early pulmonary tuberculosis. The council was entirely in sympathy with his efforts and referred the matter to the Federal Council, as the matter is a Commonwealth one. Many a general practitioner in South Australia must be able to cite a case of pulmonary tuberculosis in which the unfortunate sufferer has to earn his or her own living or be the family bread winner.

I have in mind one particular young woman, about thirty years of age, who was earning over two pounds a week as a typist. She developed pulmonary tuberculosis and had to undergo rest and treatment for about six months. During that time she received ten shillings per week from her lodge. Her parents are not young, and on account of interrupted employment they have a difficult task to make ends meet.

Although the *Pensions Act* states that an applicant for an invalid pension must be totally and permanently incapacitated from work, I understand that a tuberculous patient has sometimes been granted a temporary pension, to be reviewed from time to time.

In this case the young woman, on applying for the pension, was informed that she had failed to show that her parents could not maintain her. She relapsed, her sputum again became "positive", and with her lodge benefits reduced to almost nil she was in a sad plight. Fortunately Dr. Cowan made a special example of this very case to the powers that be and she has been granted a paltry pension of ten shillings per week. None of you present here

tonight can imagine any person fighting for his or her existence and subsisting on such a meagre grant. Dr. Cowan has asked the Lord Mayor to call a public meeting in the Adelaide Town Hall, so that the public and Press in South Australia at least can take the matter up for submission to our representatives in the Federal Parliament. The Branch council has promised its support, and I ask all officers of health in this State to give Dr. Cowan all the assistance he deservedly needs to make this aspect of preventive medicine an accomplished fact in this great country, with all its natural opportunities for treating this dreaded disease.

The next item on which I wish to dwell is at first sight a Commonwealth one, to be dealt with by the Federal Government; but on closer examination we find that the matter rests with the States, and we must see that this State right is not taken from us by the Commonwealth. I refer to the question of registration of alien practitioners. New practitioners are registered in each State by the State Medical Board concerned. The fact that each State has a separate act does not necessarily make any difference, so long as uniformity does not permit the Federal Government to take action. The effect of such a change from State to Federal control at the present time is very obvious. Under the present law in South Australia we cannot register German and Austrian degrees because we have no reciprocity with those countries. The same reciprocity clause exists in nearly all the other State medical acts. If, however, a Continental exile journeys to Great Britain and obtains a degree or diploma registrable there, we are almost bound to accept him. Fortunately the universities and colleges in England and Scotland have refused to allow foreigners to take degrees or diplomas until and after they have passed examinations and given at least two years' clinical attendance at a British medical school.

Even if they are registered after these necessities have been complied with, the Home Office may refuse them the right to practise. In New South Wales the *Medical Act* has been amended, although not yet proclaimed, whereby any foreign applicant must receive clinical instruction for three years and pass the final three years' examinations at an Australian university before being registered. The Adelaide University is enforcing this same precaution, but only for the granting of a local degree. This, however, may not influence the Medical Board, as applicants may not desire to obtain an Adelaide degree. Your council has formulated a statement which has been sent to the South Australian Medical Board, with the idea of a joint approach to the State Government to ask that the *Medical Act* be amended to protect the practising profession in South Australia from unfair and one-sided international competition. The details of this statement are contained in the council's report before you tonight.

A few months ago the Queen's Maternity Home committee approached the council with a proposition that the income limit of inmates be reduced and a sliding scale of fees be permitted as well. The object was to increase the patronage of the home and so, in addition to helping the finances of the institution, to increase the amount of clinical material available for the practical teaching of obstetrics. Your council decided that there were other causes why the home was not sufficiently patronized. Chief among these was the fact that general anæsthesia as a rule was not used for the termination of labour. This was due to the difficulty in the securing of the continuity of house surgeons at the home. (No general anæsthetic is to be given without a registered medical practitioner being present.) Accordingly a subcommittee of the council was appointed to meet the President of the Queen's Home medical committee. The result of this conference was that a letter was sent from the council to the Council of the University of Adelaide requesting that a professor or director of obstetrics and gynæcology be appointed to lecture on these subjects at the university, and to superintend the teaching of obstetrics at the Queen's Home. This has been Dr. T. G. Wilson's dream for a long time, and he stated that he could think of no more suitable body than the Branch council, as representatives of the practising profession in South Australia, to recommend the alteration.

The salient points of the letter were as follows:

It is felt that the time has arrived when this university should fall into line with other Australian universities in the appointment of a whole-time professor or director of obstetrics and gynæcology. In the report of the Federal Health Council of Australia of March, 1935, it was recommended: "the establishment of a modern maternity centre in each capital city; and in order to secure the full use of such a centre a professor of midwifery should be appointed at each State university, whether a medical school exists or not". Since this time all Australian universities with medical schools, except Adelaide, have done so. Even Brisbane, whose university has been in existence for only a short time, appointed a professor of obstetrics, the first appointment made after that of Dr. Wilkinson as professor of anatomy and dean of the faculty of medicine. In a small school like ours a full-time professor or director would have ample time to do the work that is at present done by the tutors in obstetrics. He would supervise the whole of the work at the Queen's Home and his ideas of teaching would be carried out by the members of the honorary staff. The systematic course of lectures in obstetrics and gynæcology is quite subsidiary in importance to the actual clinical teaching. The professor or director would also be appointed as director of obstetrics at the Queen's Home, so that he should be definitely in general charge of the whole of the obstetrical work if the best results from a teaching point of view are to be obtained. It has been ascertained that the Committee of Management of the Queen's Home would favourably consider such a proposal. If we had such an appointment the difficulty of getting house surgeons at the home would solve itself, as a recently qualified graduate who was keen to advance his obstetrical knowledge would welcome the opportunity of becoming a resident medical officer at a hospital where he would be under an experienced teacher during his term as a house surgeon. The council of the Branch, as representative of the great majority of the practising profession in this State, feels that the teaching of obstetrics, more especially on the clinical side, is one of the most important parts of the medical curriculum.

In medicine and surgery it is easy for a teacher to collect clinical material and give stated demonstrations

on any particular subjects or disease; whereas in obstetrics the clinical teaching can be done efficiently only at the bedside when particular abnormalities arise. It is in this regard that the teaching of midwifery is not so efficient as that of medicine and surgery, and only by the appointment of a professor or director of obstetrics can full use be made of the more meagre clinical material available. In addition to its bearing on obstetrical teaching, the whole subject is so important from the point of view of the general welfare of the women of the State that the council of the Branch feels impelled to give a definite expression of opinion on the subject to the council of the university for its consideration.

An answer has been received from the university to the effect that a subcommittee has been appointed to consider the matter and report to its council. A young practitioner in the country may have a good general knowledge of medicine and surgery, but with a difficult case in either category he can usually wait for the securing of a consultant physician or surgeon. In midwifery, however, the young man must be able to cope with almost any obstetrical emergency. Apart from the benefit to his patients, a young man's practice is frequently almost entirely built upon his prowess as an obstetrician, as not only does he bring the families into the world, but by so doing he begins his life as the family doctor.

It may be stated that none of these items of the council's activities has reached finality, but it must be remarked that changes of a reformative kind can come only gradually, and I trust that your council's work this year will bear valuable fruit in the near future. The same impossibility of finality must also be said of national insurance, which is my last subject for this evening.

You are all aware of the warfare on national insurance up to the appointment of the Royal Commission. You will remember that the bill was rushed through Parliament with almost indecent haste (to use the expression of one member of the Federal Parliament), but owing to the opposition of the medical profession the Government found that it was unable to implement it.

Had it been delayed a month later it would probably not have been passed by the newly elected Senate, with its narrow margin of Government opinion. The Federal Council asked permission to meet the Prime Minister and the Treasurer in consultation, but this was refused. The next thing we heard was that a Royal Commission was to be appointed, but that neither the Government nor the medical profession would be bound by its findings. The chief term of reference was the amount of capitation fee that should be paid for medical services under the scheme, having regard to the conditions of contract practice at present existing in Australia. This was a great surrender on the part of the Government, because the act had been framed chiefly on the advice of Sir Walter Kinnear, whose experience of national insurance was mainly obtained from conditions of contract practice in the Home Country (a very apparent difference to any right-thinking man who might have only a very meagre knowledge of the disparity of conditions in England and Australia). Furthermore, the insurance benefits to the general practitioner financially were a great improvement upon the conditions existent in England before national insurance was introduced, whereas the terms offered to us by the Government were anything but a benefit—in fact a very losing proposition.

All we asked for was: (*a*) that the health of the community should be safeguarded, (*b*) that the standard of the profession should be maintained, and (*c*) that we should receive apt remuneration for our work. In fact we asked for the well-known commercial slogan, namely, that "goods were to be suplied up to a standard and not down to a price". Sir Walter Kinnear is stated to have said that, when he was told that our minimum capitation fee should be fourteen shillings, the demand was impossible. This shows clearly that he had framed the scheme down to a price and not up to the standard.

The leading article in *The British Medical Journal* of August 20 last states:

> To meet the situation that has arisen the Federal Council of the British Medical Association in Australia has set up a special committee, consisting of the members of that council together with a general practitioner from each Branch and with some power of cooption. The Federal Council will take no action without first consulting this committee, which has already held a number of meetings and passed several rather drastic resolutions.
>
> One of these seems to question the constitutional legality of the Government having introduced any such legislation for establishing medical benefits at all, and even suggests that it may be feasible to apply to the High Court for an injunction against the Government in this matter. Another resolution asks the Government to extend the terms of reference of the Royal Commission so that it may consider a general medical service for the nation and a capitation fee which, instead of being uniform, should be proportionate to the income of the insured person. From this distance [England] both these resolutions seem to be of doubtful wisdom or advantage and to be unlikely of success. Would it not be better and more effective, instead of trying to create an altogether different situation, to accept that which has now arisen and concentrate on presenting what is undoubtedly a very powerful case to meet it, on behalf of the profession, before the commission. It is, moreover, always wise, in appearing before an arbitration court, to cultivate a friendly rather than an unfriendly atmosphere.

The council of the Association at Home made a grant of a thousand pounds towards the cost of preparing and presenting the profession's case in Australia. I have quoted this statement at length so that you can appreciate the Parent Body's opinion that our case is a very powerful one. We feel that ourselves; but it is pleasing to know that our case was a good one in the minds of our brethren in the antipodes, when the original scheme was framed on the advice of an experienced importee. You will remember the action taken by obtaining the *questionnaires*, how I have told you the State Insurance Committee of general practitioners worked far into the night and early hours of the morning framing our case for South Australia, how several witnesses worked night and

day obtaining definite and reliable evidence to put before the commission, how they stressed the matter of mileage for the country men, how some members subscribed liberally to a special fighting fund, how our counsel and accountants lost their lives under most tragic circumstances, the unexpected and untimely death of the Chairman of the Commission, and now the reluctance on the part of the Government to publish the findings of the court.

As a further rebuff on the part of the Government it intended to establish an advisory committee to collect evidence again. Fortunately this proposal was decisively rejected by Parliament just recently.

At a special general meeting on March 18, 1938, I said that it was our duty, each one of us, or at least all doctors in their respective electorates, to see their Federal representative and put the case for the whole profession before him. This should apply to the senators as well as the members of the House of Representatives. This would provide opposition in a truly constitutional way. The Federal Council can confer with the Government, but only the Government may hear our side; the Opposition may not. So long as our members individually do not conflict with the Federal Council, each can do his best to inform the members of Parliament of the profession's case.

Things must be done in a truly constitutional manner. Parliament decides the issue, and therefore the case must be presented to Parliament in all its aspects. The resolution of the several States is that the findings of the Royal Commission be published. Ask emphatically that Parliament insist upon this. Do not at this stage refuse service point blank. I can quote a few examples where such obstinacy has had or could have had disastrous and far-reaching results. (1) The waterside workers ten years ago objected to working under the Beeby award. The Government immediately implemented the *Transport Act* and volunteers were worked on the waterfront. The result of this to the maritime industrial community is not only history, it is still with us. (2) Last year the Port Kembla stevedores refused to load iron ore or scrap iron for Japan. They may have been right in principle; but it was not for one section of the community to institute what amounted to economic sanctions against a foreign power, an act which may have brought about international complications between Great Britain and the East. Fortunately good sense prevailed and the embargo was lifted. (3) Just recently the leaders of the Labour governments throughout Australia have advised their parties not to boycott the compulsory national register to be established by the Federal Government, but to oppose it constitutionally through their representation in Parliament. If well-experienced politicians know the danger of direct action it would be absurd for a non-political body, such as the British Medical Association, to make such a fool of itself.

In all your fight over national insurance be constitutional and unanimous in your activities. During my term of office your council has received copies of resolutions passed by small sub-branches of the British Medical Association throughout Australia. These communications have been just officially "received", because although some of the suggestions may have been helpful, it was for the Federal Council to dissect them and come to one united opinion on behalf of the profession in Australia. A few parochial meetings have been held in South Australia, and their findings have been listened to. If they have not been adopted in their entirety it was because we are a small State, and a section of it is still a smaller part of the Commonwealth, and all the other parts and their opinions have to be considered and welded into one definite plan for presentation to the Government.

During the past year I have felt that at times there was an undercurrent of dissatisfaction with both the Federal Council and our own Branch council, but I am glad to say that any real differences have been easily surmounted. I realize that we have had a heavy year, but our work has been lightened by the untiring efforts and loyal devotion of our lay secretary, Mr. Dobbie. He has spent much overtime with this national work, and although he has at times been granted extra clerical assistance when needed, his constant personal supervision was ever there, and I have the greatest pleasure in recording tonight the thanks of the council, the Branch and myself for his earnestness, sincerity and a layman's love for our profession.

In conclusion I wish to thank the whole Branch in general, and in particular the members of the State Insurance Subcommittee, the men who served as witnesses before the Royal Commission, our two Federal delegates, and the members of your council for the help they have given me in my pleasurable year of office, and to ask you, one and all, to stand as one united body in loyalty to the British Medical Association in Australia.

Over our great fight about national insurance it is the Government that has divided, not the British Medical Association, whose conduct has been and must in the future be in the words of the Gospel: "A house divided against itself shall not stand."

A STUDY OF HETEROLOGOUS ANTIBODIES IN THE SERUM OF POLIOMYELITIS PATIENTS.

By F. M. BURNET, MAVIS FREEMAN, A. V. JACKSON and DORA LUSH.[1]

(From the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne.)

In a recent paper (Burnet and Jackson[(1)]) it was shown, in confirmation of the work by Brodie *et alii*,[(2)] that there was little evidence that the agent in human serum which inactivates poliomyelitis virus has any relationship whatever to the

[1] Work carried out with the aid of a grant for research on poliomyelitis from the National Health and Medical Research Council.

clinical activity of the virus. The antibody may be present in relatively high concentration at the time of infection or it may be absent. If it is absent at the acute stage, it is still absent two to three months later, when the child is convalescent. From a consideration of the available data, all that can be said is that there is a significantly lower proportion of individuals with poliomyelitis antibody amongst poliomyelitis patients than in a normal population of the same age grouping. We have put forward the tentative opinion that poliomyelitis in human beings is strictly confined to the central nervous system, and that extremely little antigen reaches any part of the antibody-producing mechanism. If this is so, then poliomyelitis antibody must be either (i) the response to another antigen having determinant groups in common with poliomyelitis virus or (ii) a change in the serum globulin content, associated with increasing age or increasing experience, or both, of a variety of antigenic stimuli.

As a possible line of approach to a decision between these alternatives, we have investigated a series of samples of serum from 70 patients with poliomyelitis for their content of four antibodies in addition to poliomyelitis antibody. Two of these, diphtheria antitoxin and antibody against *herpes simplex* virus, were chosen because previous investigators had found indications that poliomyelitis serum contained less of these antibodies than normal serum. Swine influenza antibody was included because of its curious behaviour in relation to age (it appears only in individuals above ten years of age); and finally estimations of staphylococcal α antitoxin were made, to see the nature of the response to what is probably the most ubiquitous of all potentially pathogenic microorganisms.

The seventy samples of serum tested included the thirteen pairs from patients in both acute and convalescent stages of poliomyelitis which were used for the work described in a previous paper. The others were obtained largely through the cooperation of Dr. S. W. Williams from various after-care institutions in Melbourne. An effort was made to obtain a representative range of ages, and the series includes considerably more older children than would be found in a series whose age distribution corresponded to that of the epidemic.

Technique.

Serum.

After the serum had been separated, it was inactivated at 56° C. for twenty minutes, sealed in ampoules and stored in the refrigerator until required for testing. All tests were made within a year of the obtaining of the serum, and our experience indicates that no serious deterioration of any of the antibodies studied takes place under these conditions.

Method of Testing for Herpes Virus Antibody.

Tests for herpes virus antibody were made against an egg-adapted substrain of the Rockefeller Institute, H.F. strain of herpes virus, according to our standard technique on the chorio-allantois (Burnet[3]). A 1 in 100 dilution of stock herpes virus of known titre was mixed with an equal volume of undiluted serum, and after having stood from one to two hours in the refrigerator the mixture was inoculated onto three egg membranes. After two days' incubation the eggs were opened and the number of foci was recorded. The great majority of eggs showed either no foci or a confluent or semi-confluent mass of lesions; these were recorded as positive or negative respectively for herpes antibody. When foci were present in countable numbers the average count was expressed as a percentage of the foci which would be produced by the same virus in the absence of antibody. With a virus of average titre positive serum represents that producing less than 0·1% of the control foci, while negative serum produces 5% or more; samples of serum falling between these limits are tabulated either in terms of the actual percentage obtained or as ± results.

Method of Testing for Diphtheria Antitoxin.

Tests for diphtheria antitoxin were made by Jensen's[4] method on the depilated rabbit skin. A toxin (A.4460) supplied by the courtesy of Dr. Wheatland, of the Commonwealth Serum Laboratories, was used throughout. Its characteristics as determined there were the following: L+ dose 0·25 cubic centimetre, L.F. 10 units (50 minutes), D.R.M. 0·0000025 cubic centimetre, Lr/3,000 0·00006 cubic centimetre. A 1 in 500 dilution in saline solution of this toxin was mixed with an equal volume of each serum, and the mixture was inoculated intradermally in the rabbit. A necrotic lesion should therefore be produced if the serum contains less than 1/50 antitoxin unit, and no reaction if it contains more than this. Since this is approximately the Schick level of antitoxin, the results of the skin test should be comparable with those of Schick tests performed on the donors of the serum. Readings of the reactions were made forty-eight hours after injection, and in 90% of the rabbits they were sharply positive necrotic lesions or wholly negative. A few "±" lesions were noted.

Method of Testing for Swine Influenza Antibody.

Titrations of all samples of serum for swine influenza antibody were made by intranasal inoculation in mice. A 10% suspension in broth was made from glycerolated mouse lungs removed two days after inoculation. This was spun for ten minutes in an angle centrifuge and the supernatant fluid was used as stock virus. Equal parts of undiluted serum and virus were mixed, and after the mixture had stood for about thirty minutes in the refrigerator, 0·05 cubic centimetre of each mixture was administered intranasally to anæsthetized mice. Owing to the use of two-day lungs the stock virus was of considerably higher titre than those used by previous workers (Andrewes, Laidlaw and Smith,[5] and Shope[6]), causing gross lesions with an occasional death at a dilution of 1 in 1,000 and killing regularly at lower dilutions. Surviving mice were killed at seven days and the lung lesions were recorded as 1, 2, 3 or 4, according to the usual convention. If at least two of three mice died the serum was considered to have no appreciable antibody. A 2+ lesion (about one-quarter of the lung surface consolidated) was taken as standard, and the dilution of serum giving such a lesion was used to express the antibody titre. The first groups of serum were tested undiluted and diluted 1 in 10; but the results indicated that the 1 in 10 dilution was unnecessary, since the highest activity observed gave 2+ lesions with 1 in 10 serum and either nil or very small lesions with undiluted serum and virus. Subsequent tests were made only with the one mixture, and according to the average lung lesion observed the serum titres were expressed as shown in Table I.

TABLE I.

Lung Lesions.	Corresponding Antibody Titre.
4+ (dead mice)	0
3+ lesions	±
2+ lesions	1
1+ lesions	2 to 5 according to extent
No lesions	10

Method of Testing for Staphylococcal Antitoxin.

Titrations of the samples of serum in the present series were made by the usual hæmolytic technique; rabbit erythrocytes were used and results were controlled with a standard serum. Three dilutions of each serum (1 in 10, 1 in 20, 1 in 40) were tested with a constant amount of toxin equivalent to one-tenth of a unit, so that each serum could give one of the following four values: less than 1 unit, 1 unit, 2 units or 4+ units. We have tabulated the results in terms of those specimens of serum with less than 1 unit, as contrasted with those containing one or more units.

Results.

The results of these tests and of tests for poliomyelitis antibody carried out with a proportion of the samples of serum are shown in Table II.

A preliminary analysis of the results appeared to indicate, first, that there was a striking deficiency of individuals with herpes antibody amongst the older patients, and secondly, that there was at least a partial correlation between the presence of poliomyelitis antibody and diphtheria antitoxin. A closer consideration of the significance of the herpes antibody results made it necessary to look into the possible effect of social status on the results. In Melbourne it is possible to make a relatively sharp division between the industrial suburbs and the middle and upper class residential suburbs. There are, of course, a number of small areas of discrepant character; but all the Melbourne municipalities can

TABLE II.
Antibodies in Serum from Poliomyelitis Patients.

Name.	Age (Years).	Residence.	Antibody Against—				
			Poliomyelitis.	Herpes.	Swine Influenza.	Staphylococcus α Toxin.	Diphtheria Toxin.
W.B.	5	I.[1]	0	+	0		0
S.F.	6	I.	0	+	0	1	0
D.L.	7	R.[2]	0	+	0	0	0
O.W.	7	I.		+	0	0	+
D.S.	7	R.		+	0	1	+
D.J.	8	I.	0	+	0		+
P.L.	8	R.	+	0	0	1	0
G.D.	8	I.		+	0	1	+
S.R.	8	C.[3]	0	0	0	0	0
R.R.	9	I.	0	0	0	0	0
B.L.	9	I.	10+	+	0	2	+
D.M.	9	I.	10+	+	0	0	+
J.E.	9	I.		+	0	0	+
B.C.	9	C.		+	0	0	0
A.U.	9	C.	0	+	0	2	0
A.G.	10	I.	0	+	0	0	+
G.S.	10	I.		+	7	0	+
M.M.	10	C.		0	0	0	+
K.T.	10	I.		+	0	0	+
B.C.	10	I.	0	+	0	0	+
B.K.	10	I.		+	±	1	+
J.E.	10	R.		0	0	0	0
F.B.	10	I.		+	0	0	+
M.C.	10	I.		+	2		0
R.M.	10	I.		+	2	0	+
M.W.	10	R.		0	0	2	+
J.W.	11	I.	0	0	0	1	0
C.T.	11	I.		+	0	0	+
J.D.	11	C.		+	0	0	0
D.R.	11	I.	0	+	2	0	0
J.L.	11	I.	10+	0	5	1	0
J.H.	11	R.		0	0	2	0
I.R.	11	I.		+	0	0	+
B.C.	11	I.		+	0	0	+
B.S.	11	C.		+	10	1	0
J.W.	11			+	0	1	+
A.S.	11	C.	0	+	0	0	+
G.N.	12	I.		+	0	0	+
L.M.	12	I.		+	10	1	+
E.S.	12	I.		+	0	1	+
J.D.	12	C.		0	0	0	+
E.T.	12	C.		+	5	1	+
U.W.	12	I.		+	±	0	+
D.R.	12	I.	0	+	0	1	+
E.V.	12	I.		+	0	0	+
M.M.	13	C.		+	0	0	+
F.M.	13	I.		0	0	0	+
A.D.	13	R.		+	0	1	+
K.E.	13	I.		+	1	0	0
J.T.	14	C.	+	+	±	2	+
H.T.	14	I.		±	±	0	+
S.H.	14	C.		0	5	4+	+
E.J.	14			0	1	1	±
J.H.	14	I.		+	0	0	+
A.M.	14	I.		+	±	1	+
M.L.	15			0	2	0	0
J.P.	15	I.		0	0	1	+
F.S.	15	R.		+	5	1	0
J.J.	15	I.		+	0	1	+
T.S.	16	R.	0	0	5	4+	+
K.V.	16	I.		+	±	1	+
G.H.	16	C.		0	2	0	+
J.D.	17	C.		+	10	4+	0
G.D.	17	R.		0	2	1	0
A.R.	18	R.	10+	0	10	1	+
M.D.	18	R.		0	0	1	0
S.C.	18	R.		0	2	0	0
J.W.	18	R.		0	±	1	±
C.C.	24	R.		+	10	1	0
Mrs. B.	25	R.		0	10	1	+

[1] Industrial. [2] Residential. [3] Country.

NOTE: For methods of titration and significance of symbols, see text.
0 = antibody titre less than some arbitrary level, for diphtheria toxin <0·02 A.U., for staphylococcal antitoxin <1 international unit.

be classified without difficulty as either predominantly industrial and working class residential or middle and upper class residential. When the specimens of serum were reexamined in the light of information as to the donor's dwelling place, it was at once evident that whether the child came from an industrial or a better class residential suburb or from the country had a great deal to do with the antibodies he possessed. Since this influence of social environment is most clearly shown in the herpes antibody results, it will be most convenient to discuss these first.

The Distribution of Herpes Antibody amongst Poliomyelitis Patients.

The main incentive to our study of herpes antibody in human serum was the report of Weyer,[7] in which he stated that none of 27 children in the acute stage of poliomyelitis had detectable herpes antibody. Amongst normal New York children 17% of those aged under five years had herpes antibody, while 27 aged from five to fifteen years included fourteen (52%) with herpes antibody. Weyer regarded this fact as possibly indicating that poliomyelitis and herpes antibodies were identical or closely related, and in support of this view noted that three monkeys convalescent from poliomyelitis gave serum capable of neutralizing herpes virus.

This last observation is of no significance, since rhesus monkeys very frequently possess such antibody (Gay and Holden,[8] Sabin[9]). Following on the work of these investigators we have recently shown that the power of monkey serum to neutralize herpes virus is in all probability a result of natural infection by the related B. virus of Sabin (Burnet, Lush and Jackson[10]). This does not, however, dispose of the results with human serum, which might still be of importance as indicating a possible reason for the susceptibility of those children who contract paralytic poliomyelitis.

Before we discuss our own findings it will be advisable to state briefly the conclusions in regard to the epidemiology of *herpes simplex* which have been reached as a result of recent work by Dodd, Johnson and Buddingh[11] and in our laboratory (Burnet and Lush[12]). Primary infection with herpes virus usually takes place in very early childhood (six months to two years), the characteristic lesion produced being an aphthous or ulcerative stomatitis mainly affecting the buccal mucosa, but also liable to produce vesicles or ulcers on the lips and facial skin and on the hands by salivary contamination. The lesions as a rule heal readily, probably in association with the appearance of antibody, which is regularly detectable in the blood a few weeks after the appearance of the stomatitis. In the great majority of cases, and perhaps in all infected individuals, the virus is not finally eliminated with the healing of the primary lesions, but persists indefinitely somewhere in association with the mouth. Under certain conditions, particularly in association with fevers, the virus becomes active, producing a crop of vesicles containing the virus, usually about the muco-cutaneous junction of the lips. The constant presence of the virus in the body provides an antigenic stimulus which maintains blood antibody at a high level throughout life. If infection does not occur during early childhood, a high degree of resistance (non-immunological) develops, so that although opportunity for infection by the virus is widespread in any crowded community, adults practically never show primary lesions. This development of resistance has two results: (i) that with very few exceptions human serum has either no herpes antibody or a very high titre, and (ii) that persons from more comfortable homes have a much lower proportion of positive serum than unselected public hospital patients. As an example of the difference we found that amongst 27 university graduates 11 (37%) only had herpes antibody, while amongst 51 specimens of serum from adult hospital patients 46 (93%) contained antibody. Another group of samples of serum from children and adolescents collected as a control series for the present investigation gave practically the same high proportion of positive results (56 out of 61 samples). Nearly all these samples were obtained from the Royal Melbourne and the Children's Hospitals, which serve the poorest section of Melbourne. Although 90% to 95% can be regarded as the standard proportion of positive serum from the northern industrial suburbs of Melbourne, the proportion is certainly lower in the better class areas.

An analysis of our series of poliomyelitis serum according to residence is shown in Table III.

It is clear that the apparent deficiency of herpes antibody amongst older children and young adults is more likely to be due to the fact that most of these come from residential suburbs or from the country than to be directly related to their presumed undue susceptibility to poliomyelitis infection. Whatever the significance of the relative absence of herpes antibody in the older patients, it is clear that in the younger children from the industrial suburbs, who actually provided the

TABLE III.

Distribution of Herpes Antibody according to Age and Residence among Sixty-seven Poliomyelitis Patients.

Residence.	5 to 14 Years.		Over 15 Years.		Total.	
	Herpes +.	Herpes −.	Herpes +.	Herpes −.	Herpes +.	Herpes −.
Industrial suburb	30	4	2	1	32 (87%)	5
Residential suburb	3	4	2	7	5 (31%)	11
Country	8	4	1	1	9 (64%)	5

majority of the victims of the epidemic, there is no deficiency in the proportion of children possessing herpes antibody. Our results are therefore sharply at variance with those obtained by Weyer in New York. As we have previously noted (Burnet and Williams[13]), human serum nearly always has either very large amounts of antibody or none at all, nor is there any evidence of significant antigenic differences amongst human herpes virus strains. Differences in the technique of demonstrating antibody can hardly be responsible for the difference between the New York and Melbourne results. We feel that further similar studies in connexion with the prevalence of poliomyelitis in human environments of different types might supply interesting epidemiological data.

Diphtheria Antitoxin.

Discussion of the significance of heterologous immunity in poliomyelitis has largely centred around the possible relationship of diphtheria antitoxic immunity, as judged by the Schick test, to susceptibility to poliomyelitis. The subject was opened by Zingher,[14] who applied the Schick test to 954 city children who were in hospital with poliomyelitis during the New York epidemic of 1916. Eighty-one *per centum* gave positive reactions, while of normal New York children of the same age distribution only 30% to 40% would have been expected to react. In the same paper Zingher described a similar excess of positive Schick reactions amongst children in hospital with measles and scarlet fever. The rate was only a little above normal for the measles patients, but considerably higher (68%) for scarlet fever patients. According to Jungeblut,[15] Zingher's findings were not confirmed in the 1933 New York epidemic, only 33% of positive reactions being obtained amongst poliomyelitis patients.

Heaslip[16] has recently reported the results of tests made during the South Australian epidemic of poliomyelitis (1937-1938); in general his results support Zingher's findings. Unfortunately there is no detailed statement in his paper of the proportion of individuals who reacted to the Schick test at various ages in the normal child population of South Australia, and the distribution of the poliomyelitis patients in city or country is not given. Actually his differences are probably not large enough to allow a definite decision. The control group "under twelve years" are presumably mostly school children and may be compared with the poliomyelitis group "six to twelve years". The difference between 57% and 64% is probably not significant, nor in our experience (see below) is it safe to assume that a group of individuals aged over twelve years will necessarily have a lower proportion without antitoxin than a series of children from the same community aged under twelve years. In our opinion both Heaslip's data and the claim by Dwyer[17] that immunization with diphtheria toxoid reduced the incidence of poliomyelitis in South Australia provide only presumptive evidence that diphtheria immunity has something to do with the determination of susceptibility to poliomyelitis.

Our own results provide no evidence that lack of immunity to diphtheria is correlated with susceptibility to poliomyelitis; but as in the case of herpes antibody, they indicate the importance of the social environment in determining whether or not antitoxin develops. Table IV gives an analysis of the results according to age and residence.

The proportion of children from industrial suburbs with antitoxin above the Schick level is rather higher than the proportion of Melbourne school children who do not react to the Schick test (Bull[18]). It might be thought that the proportion of older individuals without antitoxin ("Schick positive") is unduly high in view of Zingher's[14] results. However, these specimens of serum are almost all from dwellers in the residential suburbs, and we can provide an equivalent normal series from graduate workers and laboratory assistants on the institute staff, aged from eighteen to twenty-five years. Of 27 such individuals, only nine (33%) had antitoxin above the Schick level.

Antibody against Swine Influenza Virus.

Swine influenza antibody in human serum is of particular interest in relation to questions of the development of immunity with age. The antibody is not found in detectable amounts in children aged below ten years, but is increasingly prevalent thereafter, and is almost always found in the serum of adults from an urban population. Laidlaw[19] and Shope[6] at one time considered it likely that swine influenza antibody was an indication of past infection with a strain of this antigenic type, and that the hypothetical strain in question was that responsible for the 1918-1919 pandemic. Francis and Magill[20] and Burnet and Lush[21] considered that this interpretation was not necessarily correct, and a final disproof of the Laidlaw-Shope hypothesis was provided by Stuart Harris, Andrewes and Smith[22] from the study of serum from inhabitants of St. Helena, an island which was not affected by

TABLE IV.

Distribution of Diphtheria Antitoxin (>0·02 Antitoxin Unit) among Poliomyelitis Patients.

Residence.	5 to 10 Years.		11 to 14 Years.		Over 15 Years.		Total.	
	+	−	+	−	+	−	+	−
Industrial suburb	15	4	13	4	3	0	29 (78%)	8
Residential suburb	2	3	1	1	3	6	6 (37%)	10
Country	1	3	6	2	1	1	8 (57%)	6

TABLE V.
Age Distribution of Swine Influenza Antibody.

Age (Years).	Combined Normal Group.			Poliomyelitis Patients.		
	+	−	Percentage +.	+	−	Percentage +.
6 to 9	2	15	11·8	0	13	0
10 to 14 ..	21	11	66·0	16	24	40
15 to 19 ..	24	2	92·0	10	3	77

the 1918 pandemic. Serum taken in 1935 had no antibody against either human or swine strains; but after an epidemic in 1936 serum from some of the same individuals contained both human and swine type antibody. The interpretation placed on the facts by Burnet and Lush[21] was that activity against swine virus was a group function of any influenza antibodies developed after the age of ten to twelve years. Antibody produced by younger individuals was type specific. There seemed a possibility that this apparent change in the character of antibody with the approach of adolescence had something to do with the development of resistance to poliomyelitis, which appears to take place about the same period. The results with poliomyelitis serum were very similar to those obtained by Andrewes *et alii*,[5] by Shope[6] and by Burnet and Lush.[21] It was of particular interest that none of the 13 children aged nine years or less had antibody, while four of ten ten-year-olds possessed it, and there was a steadily increasing proportion of children with antibody and a rise of average titre with age.

In Table V our results are contrasted with those for normal individuals obtained by the workers mentioned above, in addition to those from a small series of samples of normal adolescent serum which we tested concurrently with the poliomyelitis serum. In both the age groups, ten to fourteen years and fifteen to nineteen years, the proportion of serum with antibody is appreciably higher for the normal individuals than for the poliomyelitis patients. The difference, however, is not sufficient to indicate that there is any general failure to develop adult type group antibody amongst those susceptible to clinical poliomyelitis.

In contrast to the results with herpes antibody and diphtheria antitoxin there was no predominance of positive serum from individuals living in industrial suburbs.

TABLE VI.
Distribution of Swine Influenza Antibody among Poliomyelitis Patients over Ten Years of Age.

Residence.	Antibody Present.	Antibody Absent.
Industrial suburb	12 (43%)	16
Residential suburb	8 (61%)	5
Country	6 (55%)	5

The industrial suburbs actually showed a considerably lower proportion of positive serum than the residential areas; but this was probably wholly accounted for by the higher average age of the latter group.

It may be noted incidentally that specimens of serum taken in 1938 show the same age of appearance of swine influenza antibody (ten years) as those taken in England and America in 1934 and 1935. This may be regarded as conclusive evidence that the antibody is not due to contact with the specific virus during the period 1918 to 1925.

Staphylococcal α Antitoxin.

It is now well known that practically all human beings possess staphylococcal antitoxin in some amount. In any large series of samples of adult serum taken at random 20% to 30% show amounts of antibody equivalent to one international unit or over, and practically all have more than 0·1 unit. Bryce and Burnet[23] tested a considerable number of samples from infants and children of various ages as well as from adults. Their provisional unit may be taken as approximately $^1/_{120}$ of the international unit. They found that umbilical cord blood contained the same antibody concentration as maternal blood, and that the titre fell in the usual fashion soon after birth, so that practically no antitoxin was present during the age period from six to eighteen months. As would be expected from the ubiquity of toxigenic staphylococci, antitoxin appears early, and by five years of age practically all children have a measurable amount. According to the figures of Bryce and Burnet, there is a very wide "scatter" of titres at all ages after the first year, with a general tendency to a maximal titre at the age period of twenty to thirty years.

Table VII shows the distribution of types of serum from poliomyelitis patients which had more or less than one unit of antitoxin, grouped according to age.

TABLE VII.
Content of Staphylococcal Antitoxin in Serum from Poliomyelitis Cases.

Age (Years).	Less than One Unit.	One Unit or More.	Percentage with More than One Unit of Antitoxin.
6 to 8	4	4	50
9 to 11	19	10	34
12 to 14	7	9	56
15 to 25	4	11	73

These values are somewhat higher than those usually found. In our control series of samples of serum taken at random from hospital patients aged fifteen to twenty-five years, the serum of 38% of 26 individuals contained more than one unit of antitoxin, while in Bryce and Burnet's early series the serum of 4 out of 19 children (21%) aged from

five to ten years, and 17 out of 47 adults (36%) aged from eighteen to twenty-five years, contained more than one unit. Without a more extensive control series of comparable ages we should not feel justified in assuming that the higher proportion with more than one unit was significant; but the results are sufficient to make it certain that there is no significant deficiency in the power to produce staphylococcal antitoxin amongst children suffering from poliomyelitis. An analysis of the results according to the residence of the donor revealed that 36% of samples of serum from industrial suburbs had one unit or more; the same was true of 57% of samples of serum from the country, and of 82% of samples from residential suburbs. The order is that of increasing average age of the groups concerned, and is similar to that observed for swine influenza antibodies.

Discussion.

This detailed study of the normal antibodies in a series of 70 specimens of serum from poliomyelitis patients has provided a number of points of general epidemiological interest, but very little that has any direct bearing on the problem of susceptibility to poliomyelitis. The one relevant finding is that in a series of 70 specimens obtained more or less at random an unduly large proportion of the older patients come from residential or country areas. The higher age incidence of poliomyelitis in rural as contrasted with urban areas is well known, but differences between different social grades in the city have not previously been noted as far as we are aware. Table VIII is constructed from data available in regard to about 1,900 cases reported during the Victorian epidemic, and shows the proportion of the patients in each region who were aged fifteen years or over.

Table VIII.

Proportion of Poliomyelitis Patients aged over Fifteen Years in Different Areas (Victorian Epidemic, 1936-36).

Area.	Total Cases Reported.	Number of Patients Aged Over Fifteen Years.	Percentage.
Industrial Melbourne suburbs ..	893	28	3·2
Residential Melbourne suburbs	344	27	7·8
Provincial cities	41	5	12·2
Country (excluding Mildura) ..	504	62	12·4
Mildura	118	24	20·4
Total	1,900	146	7·7

The district of Mildura, an irrigation centre in the extreme north-west of Victoria, is separated from the rest of the country areas for two reasons: first, it is an isolated area with relatively little contact with other centres of population, and secondly, the clinical type of poliomyelitis in the area differed considerably from that seen elsewhere. Cases were numerous; but the proportion of patients with serious paralysis was very small and, as will be seen from the table, an unusual proportion of adolescents and adults were affected.

It appears to be a legitimate conclusion from the data in Table VIII that the proportion of unduly susceptible individuals in a community—and any individual aged over fifteen years who develops clinical poliomyelitis must be unduly susceptible—is inversely proportional to the density of population. Probably density of population in itself is not so important as the increased opportunity for aggregation and dispersal of individuals which it provides.

The chief interest of the present work is the evidence it provides that similar factors are concerned in the determination of the proportion of individuals who show evidence by serological tests of having been infected by two types of potentially pathogenic microorganisms, herpes virus and the diphtheria bacillus, but that different factors must be involved in the distribution of antibodies stimulated by the staphylococci and the influenza viruses.

The present results with herpes antibody and diphtheria antitoxin are concordant with previous findings by ourselves for herpes (Burnet and Lush,[12] and Burnet and Williams[13]) and by many others for diphtheria antitoxin. The principal difference between the two infections is the age at which primary contact with the organism usually occurs. In the industrial suburbs of Melbourne infection with herpes virus almost always occurs in the home before the child is two years old. Diphtheria antitoxin, on the other hand, develops as a rule after the child has gone to school. Table IX shows the difference very clearly; it comprises

Table IX.

Distribution of Antibodies in some Families Living in Industrial Areas in Melbourne.

Name.	Age.	Herpes Antibody.	Diphtheria Antitoxin.
El. Phillip	5 months.	−	+ (maternal ?)
Edna	6 years.	+	−
Co. Charles	10 months.	−	−
Ruby ..	7 years.	+	−
William ..	9 years.	+	+
Qui. Hilda ..	1 year 4 months.	+	−
Shirley ..	3 years.	+	−
Max ..	7 years.	+	+
Percy ..	14 years.	+	+
Pl. Beryl	3 years.	+	−
William ..	6 years.	+	−
Fo. Joy	4 years.	+	−
Mary	10 years.	+	−
Marjorie ..	11 years.	+	−
Cl. Douglas ..	5 years.	+	−
Walter ..	8 years.	+	−
Betty	11 years.	+	+
Su. Eileen ..	5 years.	+	−
Albert ..	6 years.	+	+
Di. Beryl	9 years.	+	−
William ..	10 years.	−	−

the data obtained from a series of samples of serum collected from family contacts of poliomyelitis patients. All the families live in one or other of the industrial suburbs.

The absence of correlation between population density and the incidence of influenzal and staphylococcal antibodies is perhaps to be expected. Influenza spreads so readily that we can feel certain that only absolute isolation from human contact can prevent infection in a susceptible individual, while skin infections with staphylococci are ubiquitous.

It was not practicable to examine the whole series of specimens of serum for poliomyelitis antibody, but sufficient were tested to indicate that there was some correlation between the presence of poliomyelitis antibody and diphtheria antitoxin, particularly in younger children. If we include also serum from contacts of poliomyelitis patients, the distribution of positive and negative serum in regard to each antibody was as shown in Table X.

TABLE X.

Correlation between Poliomyelitis Antibody and Diphtheria Antitoxin in Serum.

Age. (Years.)	Diphtheria Antitoxin + Poliomyelitis Antibody +.	Diphtheria Antitoxin − Poliomyelitis Antibody +.	Diphtheria Antitoxin + Poliomyelitis Antibody −.	Diphtheria Antitoxin − Poliomyelitis Antibody −.
5 to 10	4	5	1	14
Over 10..	3	1	6	5

As far as can be seen from very small numbers children appear to develop antibody against poliomyelitis at about the same age and under the same conditions as they acquire antitoxic immunity to diphtheria. Over ten years of age there is a suggestion that more of them develop diphtheria antitoxin without acquiring poliomyelitis antibodies.

No such correlation is evident between the incidence of poliomyelitis antibody and any of the other antibodies for which we have tested the serum.

Summary.

1. Seventy specimens of serum from patients with poliomyelitis have been examined for their content of heterologous antibodies against *herpes simplex* and swine influenza viruses and for diphtheria and staphylococcal antitoxins. The results have been analysed according to age and social environment and compared with those from control groups.

2. There is no evidence that any of the heterologus antibodies in these specimens of serum are in any different proportion from those which would be found in a comparable group of normal specimens.

3. *Herpes simplex* antibody and diphtheria antitoxin are both much more frequently found in children from crowded industrial suburbs than in those from better class areas. In the industrial areas herpes infection is contracted before the age of two years, while diphtheria antitoxin appears as a rule only after the child has begun to attend school.

4. There is no association between the frequency of swine influenza antibody or staphylococcal antitoxin in serum and the nature of the social environment.

5. There is a significant correlation between the presence of poliomyelitis antibody and diphtheria antitoxin in young children from industrial suburbs; this suggests that the two antibodies are acquired at about the same age and under similar environmental conditions.

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References.

(1) F. M. Burnet and A. V. Jackson: "Poliomyelitis. II: The Significance of Neutralizing Antibodies in Human Sera", *The Australian Journal of Experimental Biology and Medical Science*, Volume XVII, 1939 (in the press).

(2) M. Brodie, A. E. Fischer and M. Stillerman: "Neutralization Tests in Poliomyelitis: Sera Taken during Acute and Convalescent Stages of Disease and Tested with Passage Virus and Strain Isolated during 1935 New York City Outbreak", *The Journal of Clinical Investigation*, Volume XVI, May, 1937, page 447.

(3) F. M. Burnet: "The Use of the Developing Egg in Virus Research", Medical Research Council of the Privy Council, Special Report Series, Number 220, 1936.

(4) C. Jensen: "*Die intrakutane Kaninchenmethode zur Auswertung von Diphtherie-Toxin und Antitoxin*", *Acta pathologica et microbiologica Scandinavica*, Supplement 14, 1933, page 1.

(5) C. H. Andrewes, P. P. Laidlaw and W. Smith: "Influenza: Observations on the Recovery of Virus from Man and on the Antibody Content of Human Sera", *The British Journal of Experimental Pathology*, Volume XVI, December, 1935, page 566.

(6) R. E. Shope: "The Incidence of Neutralizing Antibodies for Swine Influenza Virus in the Sera of Human Beings of Different Ages", *The Journal of Experimental Medicine*, Volume LXIII, May, 1936, page 669.

(7) E. R. Weyer: "Herpes Antiviral Substances: Distribution in Various Age Groups and Apparent Absence in Individuals Susceptible to Poliomyelitis", *Proceedings of the Society for Experimental Biology and Medicine*, Volume XXX, December, 1932, page 309.

(8) F. P. Gay and M. Holden: "The Herpes Encephalitis Problem. II", *The Journal of Infectious Diseases*, Volume LIII, November-December, 1933, page 287.

(9) A. B. Sabin: "Studies on the B Virus. III: The Experimental Disease in Macacus Rhesus Monkeys", *The British Journal of Experimental Pathology*, Volume XV, December, 1934, page 321.

(10) F. M. Burnet, D. Lush and A. V. Jackson: "The Relationship of Herpes and B. Viruses: Immunological and Epidemiological Considerations", *The Australian Journal of Experimental Biology and Medical Science*, Volume XVII, 1939, page 41.

(11) K. Dodd, L. M. Johnson and G. J. Buddingh: "Herpetic Stomatitis", *The Journal of Pediatrics*, Volume XII, January, 1938, page 95.

(12) F. M. Burnet and D. Lush: "Herpes Simplex: Studies on the Antibody Content of Human Sera", *The Lancet*, Volume I, March 18, 1939, page 629.

(13) F. M. Burnet and S. W. Williams: "Herpes Simplex: A New Point of View", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1939, page 637.

(14) A. Zingher: "The Schick Test in Poliomyelitis, Scarlet Fever, Measles and in Normal Children: Its Bearing on the Question of Natural Immunity", *American Journal of Diseases of Children*, Volume XIII, 1917, page 247.

(15) C. W. Jungeblut: "Is there any Relationship between Resistance and Susceptibility to Poliomyelitis and Diphtheria?" *The American Journal of the Medical Sciences*, Volume CXCII, November, 1936, page 661.

(16) W. G. Heaslip: "A Case of Relapse in Experimental Poliomyelitis", *The Australian Journal of Experimental Biology and Medical Science*, Volume XVI, 1938, page 285.

(17) J. M. Dwyer: "Diphtheria Immunization", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, January 8, 1938, page 52.

(18) H. Bull: "Transactions of the Australasian Medical Congress (British Medical Association), Fourth Session, Hobart, 1934", page 323.

(19) P. P. Laidlaw: "Epidemic Influenza: A Virus Disease" (Linacre Lecture), *The Lancet*, Volume I, May 11, 1935, page 1113.

(30) T. Francis and T. P. Magill: "The Incidence of Neutralizing Antibodies for Human Influenza Virus in the Serum of Human Individuals of Different Ages", *The Journal of Experimental Medicine*, Volume LXIII, May, 1936, page 655.

(31) F. M. Burnet and D. Lush: "Influenza Virus on the Developing Egg. VII: The Antibodies of Experimental and Human Sera", *The British Journal of Experimental Pathology*, Volume XIX, February, 1938, page 17.

(32) C. H. Stuart Harris, C. H. Andrewes and W. Smith: "A Study of Epidemic Influenza, with Special Reference to the 1936-37 Epidemic", Medical Research Council of the Privy Council, Special Report Series, Number 228, 1938.

(33) L. M. Bryce and F. M. Burnet: "Natural Immunity to Staphylococcal Toxin", *The Journal of Pathology and Bacteriology*, Volume XXXV, March, 1932, page 183.

SOME COMMON PROBLEMS IN EVERYDAY PRESCRIBING.[1]

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When the Science Committee conferred on me the honour of a request for an address at one of the monthly meetings, it was suggested that the subject be something related to the hormones or to the vitamins, or to the newer chemotherapeutic drugs, about all of which we know so much and so little. These, however, are at present glittering so brightly in the scientific and pseudo-scientific literature of skilful advertisers who cater persistently and gratuitously for our post-graduate education in therapy, that I felt that some more homely subject might be more useful. I am fortified in this selection by numerous inquiries from brother practitioners, and in some cases by frenzied appeals from harassed dispensers.

There is no doubt but that we are in the midst of a bloodless revolution with regard to prescribing: at the beginning of the century a phase of nihilism with regard to the value of drugs; then the swing to the biologicals—hormones, vitamins, serum and vaccines; now a swing towards the synthetics and chemotherapy—hypnotics, synthetic modification of the alkaloids, synthetic hormones and vitamins.

With coincident progress in pharmacology, has come a more rational selection and application of older drugs, whose use was hitherto sanctioned by empiricism, tradition or ancient authority. As research has shown what therapeutic weight any selected drug may be expected to carry, our prescribing has become more simple, direct and reasonable.

I can best illustrate my meaning with regard to the simplicity of prescribing by a few specific examples.

The patient has a microcytic hypochromic anæmia of the chlorotic type, for which iron is the essential. Having sought for and, if possible, eliminated any source of blood loss or blood destruction or other cause of anæmia, having given instructions with regard to diet, both qualitative and quantitative, in relation to iron-containing foods and vitamins, having attempted to eliminate habits of life that dispose to anæmia, we are now in a position to select some suitable form of iron which is efficient and which will not disturb a digestion already deranged by the disease.

Careful observation over the last few years, though failing to account for many points in the absorption, assimilation and excretion of iron, has brought out many things which may be taken as axiomatic.

1. Apparently excessive doses are essential if the hæmoglobin rise is to progress by 1% to 2% daily—23 to 46 milligrammes of iron (one-third to two-thirds of a grain); this is probably because of the difficulty of absorption in the alkaline bowel, because of the gross bowel loss (ferrous sulphide) and possibly because of the need for some impurity (for example, copper, manganese or cobalt).

2. Organic iron (chlorophyll, iron peptonate *et cetera*) has no advantage over inorganic iron; the iron moiety is too small, is not ionizable, and is probably converted to the inorganic form (for example, ferrous chloride) before absorption.

3. Ferric compounds, including the erstwhile popular ferric chloride (steel drops), and many of the colloidal forms and organic compounds, are the least efficient.

4. Inorganic iron in the ferrous state is the most effective.

5. Concentrated liver extracts do not contain iron and are useless; but whole liver, fresh or dried and powdered, and even liver ash, is of use because of its high content of iron and copper and possibly (in the fresh state) of its vitamins.

6. The oral route of administration is the only satisfactory one. When iron is given by injection absorption is slow from local precipitation, and the therapeutic and toxic doses approximate too closely for safety. One authority maintains that transfusion is the only effective means of giving iron parenterally.

When, as a result of these observations, it has been decided to give iron in the inorganic ferrous condition, the next step is to decide on the salt, to consider the efficient dose and then the method of prescribing.

The ferrous salts may be divided into two classes: the soluble salts (represented by ferrous iodide, citrated ferrous chloride, ferrous sulphate, ferrous phosphate in acid solution and ferrous gluconate), and the insoluble salts (reduced iron, saccharated carbonate of iron and Blaud's pill).

The soluble salts, which are easily the most effective, have the disadvantages that they disturb the digestion, discolour the teeth, have astringent and unpleasant tastes, and either by their astringency provoke constipation or by irritation diarrhœa. Of these, the less highly ionized ones—ferrous phosphate in acid solution, citrate of iron and ferrous gluconate—are the better tolerated.

[1] Read at a meeting of the Victorian Branch of the British Medical Association on May 3, 1939.

The average daily effective doses appear to be from seven to ten grains, though many observers would double this dosage.

When expense is not a consideration the iron salts can be given as proprietary tablets, "Tabloids", "Palatinoids" or pills; these are frequently combined with liver or vitamins or both. They can be simply prescribed in the official syrups.

Syrupus Ferri Iodidi (3½ grains in 3i or ⅛ grain of iron) 3iii daily minimum.
Syrupus Ferri Chloridi (A.P.F.) (3 grains in 3i) 3ii to 3iii daily.
Syrupus Ferri Phosphatis (A.P.F.) (twice B.P. 1914) (2 grains in 3i) 3iv to 3vi daily.

There is not enough iron in the other iron-containing syrups to be effective:

Syrupus Ferri Phosphatis Compositus (Parrish) (¼ grain in 3i with $Ca_3(PO_4)_2$).
Syrupus Ferri Phosphatis cum Quinina et Strychnina (Easton) (1 grain in 3i, ⅛ grain in quinine, $^1/_{60}$ grain strychnine).
Syrupus Glycerophosphatis Compositus (negligible).

Many of the simple salts can be prescribed in simple solution; but because of their great tendency to oxidize they are advisedly flavoured with the reducing syrup glucose and many prescribers add one or two minims of dilute hypophosphorus acid to the dose as an active reducing agent.

℞
Ferri Subchloridi Citrati, gr. iii.
Tincturæ Aurantii, m. x.
Syrupi Glucosi, 3i.
Aquam ad, 3ii.

℞
Ferri Sulphatis, gr. iii.
Cupri Sulphatis, gr. $^1/_{60}$.
Magnesii Sulphatis, gr. xx-xxx.
Syrupi Glucosi, 3i.
Aquam ad, 3ii.

They can also be readily given in gelatine capsules, and my own experience is that, given this way, intimately mixed with a colloidal kaolin, they appear to be better tolerated.

The insoluble ferrous salts are usually well tolerated, are practically tasteless, but are much less efficient unless given in larger doses; thus *Ferrum Redactum* 10 to 20 grains, *Pilula Ferri* 45 to 60 grains, *Ferri Carbonas Saccharatus* 45 to 60 grains.

The saccharated carbonate, which is useful for small children, can readily be given in broths, with bread and jam or with mashed vegetables. It is readily prescribed as such in two to three ounce quantities—one teaspoonful given in divided doses through the day.

Blaud's pill often presents difficulties; few people can manage more than a five-grain pill (twelve pills a day), despite the fact that they can swallow a cricket ball if it be presented as a bolus of food. Old machine-made pills and tablets are considerably less effective because of the tendency to oxidation, and when kept for a time they set hard and do not disintegrate readily. On the rare occasions on which I order the Blaud pill, I instruct the dispenser to make it into a soft mass and dispense it in rolls of twenty grains. These the patient chews after a meal.

A relatively easy way in which the equivalent of Blaud pills may be ordered is:

Ferri Sulphatis Exsiccati, gr. x.
Ferri Carbonatis Exsiccati, gr. vi.
Lactosi, gr. ii.
Make a powder; send 3i.
Gr. x-xx stirred up with water (3i) and taken after food.

The dispenser will make a measure for the appropriate dose from the lid of a pill box if instructed. If desired, laxatives (phenolphthalein, aloin, extract of cascara) may be added.

When the powder is dissolved in water a fresh precipitate of ferrous carbonate is produced, and three grains of the powder are the equivalent of five grains of Blaud pill.

Iron and ammonium citrate comes into a class by itself. Though it is a ferric salt, a simple solution has a negligible quantity of ferric ions, the iron participating in a complex ion or being present in colloidal form. It does not precipitate proteins and so is not astringent or irritating. The effective daily dosage (about 60 grains) is readily given as a simple solution—say twenty grains in two drachms of water, flavoured with 20 to 30 minims of syrup of orange.

Realizing the importance of menstruation as a factor in anæmia, and the exaggerated flow so often associated with chlorosis, I frequently give another scale salt—*Ferri et Quininæ Citras*, 40 to 60 grains a day—for a few days from the onset of the period, for the tonic effect of quinine on the uterine musculature; and I am of the impression that the effect is entirely favourable.

Another form of simple prescribing is the "minim dosage" method. The patient requires, say, cardiotonic glycosides. If expense is no object, these can be given as any of the isolated glycosides—"Digoxin", "Nativelle's Granules", "Digilanid", Homolle's "Digitalin", "Ouabaine", strophanthin, "Scillaren", "Folinerin" *et cetera*. Often, however, when they are to be taken over a long period, as in a case of fibrillation, the official standardized tincture is both economical and entirely satisfactory.

The glycosides in this are, however, readily hydrolysed by water, and so the tincture should not be given in aqueous solution. If it requires dilution, either for convenience in dosage or in the interests of safety, it is best prescribed with an alcoholic solution, thus:

℞
Tincturæ Digitalis, m. x-m. xv.
Tincturæ Cardamomæ Compositæ ad 3i.

In most cases, however, it is better to prescribe the tincture as such and to indicate the requisite dosage in minims.

The use of the term "drop" should be entirely discarded. The volume of a drop depends on many

factors—the viscosity of the substance, the temperature, the aperture of the dropping vessel, specific gravity of the fluid *et cetera*—so that a fluid drachm may represent anything from 20 drops in the case of glycerin to 200 drops in the case of alcoholic and ethereal fluids.

My own practice is to insist that the patient shall use a minim measure, which is ordered on the prescription. Alternatively, the dispenser is instructed to improvise a measure by marking off the dose in minims on an ordinary teated medicine dropper. This can readily be done by aspiration of the necessary quantity from a graduated minim measure into the dropper, the upper level being marked with adhesive tape.

This method of dose measurement can be applied to many other cases, for example enuresis. One has decided to give belladonna to its therapeutic limit. An easy way is to prescribe *Tincturæ Belladonnæ* ℥i, *Extracti Glycyrrhizæ Liquidi*, m. xxx, *Glycerinum ad* ℥ii. Then with a dropper marked with 5, 10 and 20 minim quantities, the child can be started with 10 minims of the mixture (five minims of tincture of belladonna) and the dose readily increased by five minims or more of the mixture daily till mild toxic symptoms appear. The same method may be used with tincture of stramonium for the symptomatic relief of *paralysis agitans*.

A similar procedure is possible with iodine, which is now used freely for a large number and variety of conditions. My own practice has been to start off with the *Liquor Iodi Mitis*, which contains 2·5% iodine and 1·5% potassium iodide (30 minims contain four-fifths of a grain of free iodine or one grain of total iodine).

The potassium iodide has not proved a source of trouble, and this solution is more readily miscible with milk than the stronger *Liquor Iodi Simplex* (fifteen minims contain one and a half grains of iodine). Furthermore, by the first prescription the occasional case of iodine idiosyncrasy is discovered with less disastrous results.

This method of simple prescribing is by no means confined to liquids. Thus when a simple saline diuretic is required to render the urine alkaline, the older mixture of potassium citrate, tincture of hyoscyamus, spirit of nitrous ether and infusion of buchu is being replaced by the prescription of bulk powders of potassium citrate, sodium citrate or potassium or sodium bicarbonate in quantities of three to four ounces. The dispenser is instructed to make a measure from a suitable chip or cardboard pill box to carry half to one drachm, and the patient is given some litmus papers and instructions to modify the doses in number or quantity as alkalinity is secured. When pain and frequency of micturition are features the reinforcement of the mixture with tincture of hyoscyamus (40 to 60 minims) and phenazone (five to eight grains) is useful in early stages prior to alkalinization.

A convenient method for the administration of citrates is to prescribe the potassium or sodium bicarbonate (with magnesium carbonate if constipation is a coincident feature) and direct the patient to dissolve or mix a teaspoonful of this with water, sweeten with sugar, honey or fruit syrup, then add to this the juice of half a lemon and take while effervescing. A good lemon yields about an ounce of juice, representing 30 to 40 grains of citric acid.

Even children will "fall for" a pleasant effervescing drink, and if there is any virtue in vitamin *C* in urinary infections they benefit by it.

If urinary acidity is aimed at, the official acid sodium phosphate may be prescribed in bulk and given in doses of 30 to 60 grains dissolved in a glass of sweetened water. Incidentally, such medication is particularly useful for symptomatic relief in cases of oxaluria, despite the theoretical superiority of citrates of potassium, magnesium, or both.

It is to be noted that with some people efficient acidifying doses of sodium acid phosphate will provoke purgation, and one of the diuretic ammonium salts—the chloride or the benzoate—must be substituted.

Ammonium chloride has come into favour again after lying on the therapeutic scrap-heap for some thirty years, probably because the pharmacologist has explained the rationale of its erstwhile empirical use. The ammonium moiety is split off by the liver and converted to the natural diuretic, urea, while the now unbalanced acid provokes a mild acidæmia, which favours diuresis and coincidently produces a bacteriostatic acidity in the urine.

Strong-minded people will take 30 to 60 grains in simple solution; for the others it can be ordered in solution flavoured with liquid extract of liquorice, or in cachets (of which a large one will carry about 20 to 25 grains), to be taken with a copious drink of water. The synergistic reinforcement of the action of the mercurial diuretics of the "Novasurol", "Neptal", "Novurit" class and of the urinary bacteriostatics of the mandelate group, with ammonium chloride, is a matter of common experience. The tendency to give medicines in the bulk powder form is gaining favour, and this form of administration is so convenient that it is hard to understand why so many are still prescribed in mixture form.

In this connexion the alkaline type of digestive powder is worthy of comment; for though many objections can be, and are, raised to its continued use over long periods, it still remains a friend in need as offering the most prompt symptomatic relief. Despite my conversion to the more scientific chemico-mechanical adsorbents and colloids—magnesium trisilicate, "Neutralon", "Alocol", kaolin, "Amphojel" and others—I have to confess (not without a sense of guilt) that the alkalis still hold a cherished place in my own prescribing.

On theoretical grounds a drug like synthetic magnesium silicate would appear to satisfy all the necessary requirements. Its almost selective capacity to withdraw by adsorption toxins, alkaloids and dyes from solutions is pregnant with therapeutic possibilities. Its rapid chemical neutraliza-

tion of gastric acid with the subsequent formation of an adsorbent colloidal silicic acid gel, its slow neutralizing effect as the concentration of acid diminishes, its potential capacity for detoxication of necrotic elements in the ulcer bed and for the production of local achlorhydria, its freedom from the possible production of alkalosis, all would indicate that in this we have the perfect drug. Unfortunately this is not borne out by experience. The natural non-colloidal forms of magnesium silicate—talc, meerschaum or sepiolite, serpentine—do not show these properties to any great extent, and except in the hands of a few manufacturers the synthetic product is only slightly better.

These various adsorbents are well known by now among the dyspeptic laity; but "the man in the street", in prescribing for his own dyspepsia, almost invariably selects the alkaline powder as such or in some proprietary form. So general is this choice that it might be worth while to review this type of medication and to consider whether, in its great capacity for modification to suit the exact requirements of the individual, it is really so bad as reputed.

Originally it was given in the form of a bismuth-soda-magnesia mixture, thoroughly clogged with mucilage (in the interest of pharmaceutical elegance) to suspend the insoluble powders. I do not for a moment think that demulcents of the mucilage class are contraindicated in peptic ulcers, and many patients have spoken of the benefit obtained by the routine use of decoctions of linseed or slippery elm bark; but, given with the insoluble alkalis, I believe that the mucilage inhibits their chemical activity and interferes with their mechanical value as adsorbents. However, such a discussion is needless when the drugs are to be given in powder form. An average formula is the following:

℞

Bismuthi Carbonatis.
Sodii Bicarbonatis.
Magnesii Carbonatis āā, gr. xx.
Spiritus Menthæ Piperitæ, m. v.
Fiat Pulvis Mitte ℨiii

This is not well balanced and often produces diarrhœa, which may be overcome by an increase in the bismuth, by a reduction in the magnesia, or better, by the addition of calcium carbonate or colloidal kaolin, thus:

℞

Bismuthi Carbonatis.
Sodii Bicarbonatis.
Calcii Carbonatis Præcipitati.
Magnesii Carbonatis Ponderati āā, gr. xv.
Olei Menthæ Piperitæ, m. ½.

Or

℞

Bismuthi Carbonatis.
Sodii Bicarbonatis.
Magnesii Carbonatis Ponderati.
Kaolini (colloidal) āā, gr. xv.
Olei Menthæ Piperitæ, m. ½.

It is well not to take too much notice of an initial laxity of bowels, as this usually settles down after a short time.

Sometimes the patient is constipated—a frequent association with hyperchlorhydria—and a full dose of magnesia is indicated. Magnesia, however, is not a dependable drug, and in larger continued dosage often produces considerable discomfort in its action, a condition which is increased by the formation of the very laxative magnesium chloride, through neutralization of the magnesia by the high gastric acidity. I rarely give more than 20 grains per dose, and if this is not effective some other laxative may be added. Of these, *Pulvis Rhei*, five grains, is useful; but in more intractable cases the addition of *Extractum Cascaræ Sagradæ Siccum*, one to one and a half grains, may be indicated in the early stages. Phenolphthalein may be added; but it produces the red alkaline coloration when the powder is mixed with water.

Perhaps gas production is unusually severe. Several modifications will help to overcome this. The sodium bicarbonate may be reduced in quantity, the bismuth carbonate may be replaced by bismuth salicylate, and magnesium oxide may be substituted for the carbonate and a mechanical adsorbent may be added. The oxide is, weight for weight, a more efficient antacid than the carbonate, and neutralizes the acid without the evolution of carbon dioxide. The bismuth salicylate acts primarily as an adsorbent, and slowly liberates its mildly antiseptic, mildly anodyne salicylate radicle. An increase in the quantity of the carminative (*Olei Menthæ Piperitæ*, m. i) or the substitution of a different oil (for example, oil of cajuput or oil of cinnamon) may assist the relief of flatulence.

In view of the nervous element in most dyspepsias or even ulcers—for the ulcer patient is almost invariably of the highly strung, nervously active type—bromide might be added with advantage in many cases. The prescription would now be:

℞

Bismuthi Salicylatis, gr. xv.
Sodii Bicarbonati, gr. xii.
Magnesii Oxidi Ponderati, gr. xviii.
Potasii Bromidi, gr. viii.
Kaolini (colloidal), gr. vii (to make up to ℨi).
Olei Menthæ Piperitæ, m. ½.

If belladonna is indicated to inhibit gastric secretion or to allay excessive peristalsis, it may be incorporated as *Extractum Belladonnæ Siccum* (one grain equals $^1/_{100}$ grain total alkaloids) or as *Belladonna Pulverata* (three grains equal $^1/_{100}$ grain total alkaloids).

The idea of the compound powder prescription can be extended and modified indefinitely. As an example, for the symptomatic relief of diarrhœa, perhaps to follow initial treatment with sulphate of soda, the following may be used:

℞

Bismuthi Salicylatis.
Calcii Carbonatis Præcipitati.
Kaolini (colloidal) āā, gr. xx.
Olei Cinnamomi, m. ½.

Or

℞

Bismuthi Salicylatis, gr. xv.
Sodii Salicylatis, gr. v.
Pulvis Cretæ Aromatici, gr. xx.
Kaolini (colloidal), gr. xx.
Olei Cinnamomi, m. ½.

Three or four doses only need be ordered, and these are administered at intervals of one to two hours.

A common problem in prescribing is the selection of a suitable vehicle to carry the essential drug. This is a matter of some importance, and its choice will depend on many factors, including the relative solubilities of the basic drugs and their required sphere of action—whether they are for local action on skin or mucosa or for absorption and general action.

I can perhaps best illustrate the point by an experience of some years ago:

The case was one of malignant disease of the pharynx, and radium was to be implanted. It was considered that paraldehyde given *per rectum* might be sufficient for anæsthesia. The patient was brought to the theatre, somnolent, and smelling strongly of paraldehyde; but as soon as the operative procedure was begun he gave the lie direct to his apparent somnolence with force and eloquence. Inquiry showed that he had been given one and a half ounces of paraldehyde dissolved in oil instead of saline solution.

In this case there were two potential and immiscible solvents for the paraldehyde—the oil and the rectal mucosa. A drug will disseminate itself between the two in proportion to its solubility in each. If, for example, a drug is fifty times more soluble in one medium than it is in another, the media being immiscible, approximately $^{49}/_{50}$ will be held by the more efficient solvent, while $^{1}/_{50}$ will be distributed to the less effective solvent, in this case the rectal mucosa.

With rectal injection the distribution is not a static one, as with the circulatory removal of the paraldehyde from the mucosa more will be absorbed, but the absorption from the unsuitable vehicle (olive oil) was so slow that it was not possible in an hour to get a sufficient concentration to produce hypnosis. Saline solution should most certainly have been used.

This point is excellently illustrated in the official oculenta. These are sterile ointments for the conveyance of drugs to the conjunctival sac—cocaine, physostigmine, atropine *et cetera*. The alkaloids are readily soluble in the ointment base, and pharmaceutical consideration would prompt the use of the pure alkaloid. These, however, are not readily water-soluble and so would not be distributed to the conjunctiva.

The alkaloid salts on the other hand, though not soluble in the ointment base, are readily soluble in the watery medium of the conjunctival sac. Hence these salts, dissolved in water, are incorporated into the ointment base, in which they merely form an emulsion readily available for distribution to the eye.

When ephedrine is to be applied to the nasal mucosa we have the choice of both aqueous and oily media, as indicated in the following:

℞

Ephedrinæ, gr. v.
Mentholis, gr. iii.
Chlorbutolis, gr. x.
Paraffinum leve ad, ʒi.

℞

Ephedrinæ Hydrochloridi, gr. vi.
Sodii Chloridi, gr. iv.
Chlorbutolis, gr. iii.
Aquam Destillatam ad, ʒi.

On general pharmaceutical principles, the alkaloid is incorporated in the oily base, while its hydrochloride is dissolved in the aqueous base; but on account of the surprising solubility of the free alkaloid (ephedrine) in water, both of these preparations are therapeutically effective. If, however, it is desired to add adrenaline to these prescriptions, the use of the hydrochloride in an aqueous base is considerably the more efficient.

The absorption of drugs through the skin presents a different problem from that of mucosal absorption, because of the fatty nature of the sebum. Thus for the application of an alkaloid, say cocaine, to the skin, the aqueous solution of its salt is practically unabsorbed; but if the free alkaloid is dissolved in oleic acid and incorporated in a fatty base (lard, lanoline or mixture of each) it penetrates readily.

When iodine is to be applied as a counter-irritant or as an antiseptic, alcoholic solutions are efficient; but if deeper penetration is required, it is better given in oily solution (in olive oil or oleic acid) and applied either on a pad or by friction. This can be prescribed as a 2% to 5% solution in oleic acid.

If it is desired to add analgesics or other counter-irritants to this, the following prescription is a very useful application for sprains, myositis, fibrositis *et cetera*:

℞

Iodi, gr. ix (2%).
Acidi Oleici, ʒi.
Dissolve and add
Mentholis, ʒii.
Camphoræ, ʒii.
Methyl Salicylatis ad, ʒii.

Sometimes a slight but requisite permeability of the skin by fat-insoluble substances can be effected by the use of a volatile solvent of sebum—ether or acetone—applied as a preliminary to treatment. In some cases such a solvent may be incorporated in a lotion with good effect. The following modification of a frequently used sulphur lotion for the treatment of acne will illustrate the point.

Zinci Sulphatis, ʒi.
Potassii Sulphuratæ, ʒi.
Acetoni, ʒiss.
Glycerini, ʒii.
Aquam Rosæ ad, ʒiii.

When the zinc sulphate and the sulphurated potash are dissolved separately and the solutions are mixed, fine precipitates of sulphur and zinc sulphide are formed. The acetone is readily miscible with the water and by dissolving the skin fats allows of a greater penetration of the precipitate. The lotion should be freshly prepared in small quantities, as on being kept the precipitate tends to agglutinate.

This example of an intentional and useful chemical incompatibility serves as a reminder of a very common problem. Of course, with simplicity of prescribing, which is such a laudable offshoot of modern pharmacological application, incompatibility is not such a bugbear as of yore. There are, however, still many prescribers who fail to recognize in the greater complexity of recently used synthetics delicately balanced, large and somewhat unstable molecules that are very sensitive to the presence of other drugs, and whose degradation products may be decidedly toxic.

Though the prescribing of soluble barbiturates in mixtures with bromides, chlorol hydrate, or with "tonic" syrups has become a common practice, it is not one that is to be commended. The soluble barbiturates are subject to hydrolysis, liberating, in acid solution, their insoluble forms, but in the absence of acid, forming a strongly alkaline solution, which will convert chlorol hydrate to chloroform, will liberate ammonia from ammonium bromide, and may precipitate any alkaloids in solution.

The dispenser, recognizing these possibilities, almost invariably dispenses the insoluble barbiturate, freely powdered and suspended with mucilage. Such a practice merely anticipates what will certainly happen when the soluble barbiturates are prescribed in the acid medium of the average "tonic" syrup; but by an increase in the viscosity of the mixture with mucilage the possibility of taking the bulk of the hypnotic in the last dose is minimized.

When the prescriber is unfamiliar with the chemical tendencies of any complex, safety surely dictates that the drug shall be prescribed by itself.

The dispenser tends to take our prescribing eccentricities seriously, and unless the product is really dangerous (as far as he knows!) will adopt all sorts of pharmaceutical tricks and gymnastics to minimize them. Only recently in a final pharmacy examination, where problem prescriptions actually met with are set as tests (of ingenuity), the following mixture occurred:

℞
Liquoris Hydrargyri Perchloridi, 3i.
Ammonii Carbonatis, gr. v.
Liquoris Strychninæ, m. vi.
Potassii Iodidi, gr. x.
Syrupi Simplicis, 3i.
Aquam ad, 3iv.

This should not be dispensed in any circumstances. The strychnine will be precipitated by the double iodide of mercury and potassium (a general alkaloidal precipitant) if it has not already been thrown out of solution by the ammonium carbonate. Of course, it is possible that some of the strychnine will stay in solution if the mercury has previously been precipitated as the yellow oxide by interaction with the ammonium salt. In this case it runs the gauntlet of slow crystallization as the sparingly soluble iodide. With so many dangerous potentialities, no dispenser should be made to assume the responsibility of deciding how it should be dispensed, or indeed whether it should be compounded at all.

If this paper serve no purpose other than an exhortation to members to prescribe simply, with a thoughtful avoidance of incompatibility, using a minimum of drugs in each prescription, each necessary and each carrying its full therapeutic weight, its presentation may be justified.

A NOTE ON THE OCCURRENCE OF CIMEX HEMIPTERA IN NAURU, CENTRAL PACIFIC.

By L. A. WINDSOR-MCLEAN, M.B., B.S. (Adelaide), D.T.M. (Sydney),
Medical Officer to the British Phosphate Commissioners, Nauru Island.

So far as I am aware the occurrence of bed bugs in Nauru has not previously been recorded; hence this note. There is no mention made of the occurrence of *Cimex hemiptera* in the medical survey made by Grant in 1933, and I have been unable to find any other reference to such an occurrence on Nauru. On the other hand, there have been references to the ubiquitous head louse, as, indirectly, by Wedgwood. Notwithstanding this lack of reference these insects apparently occur in large numbers.

My attention was first drawn to the subject when I was consulted by a European employee, who complained that he had been bitten by some sort of insect and brought along some specimens of the offending animal. These, upon examination, both before and after being cleared with caustic soda solution, were revealed as adult male and female members of the genus *Cimex*, family Cimicidæ, super-family Cryptocerata and sub-order Heteroptera. There were also some third-stage nymphs and a number of discarded nymph cases.

The bugs were thought to belong to the species *Cimex hemiptera* rather than *Cimex lectularius*, because of the absence of a pronounced wing-like expansion on the pronotum, the dorsal convexity of the latter, and the shape of the abdomen; this was more elongated and narrow, especially in the male, than would seem to be normal for the species *Cimex lectularius*. Furthermore, *Cimex hemiptera* is the species of bed bug usually found in warm countries, of which Nauru is undoubtedly one, with its average daily maximum temperature of 34·9° C. (95° F.), very little changed throughout the year, and its absence of seasons.

Distribution.

As far as my inquiries have been able to show, none of the European dwellings, apart from the one mentioned above, have been noticed to be infested. Furthermore, the weekly sanitary inspections have failed to reveal any evidence of such infestation, though it has been sought.

The bugs appear to be unknown to the Nauruans, who, when shown specimens, did not recognize them. In this inquiry some of the chiefs and school children were questioned. Furthermore, I am informed by the government medical officers that the district inspections, which are conducted regularly, have never revealed evidence of bed bugs.

On the other hand, amongst the indentured Chinese labourers the insect is found to be very prevalent, and I think that it could safely be said that bugs can be found in most, if not all, of the dwellings occupied by Chinese.

All the specimens examined belong to the one species, *Cimex hemiptera*.

Possible Epidemiological Significance.

Whilst *Cimex hemiptera* is at present apparently confined to Chinese quarters, there is no guarantee that its distribution may not gradually become more widespread—a view which is supported by the fact that at least one European dwelling has been infested. The contact between the Chinese and the Nauruans is reasonably close, and it is quite possible that Nauruan dwellings may become similarly infested. In that event we have a possible vector of disease, even though the possibility be remote. One thinks of a rickettsial disease of the typhus group, though none has yet been proved to be present, and *Cimex* species are not common vectors in this group. Kala-azar exists in China, more especially north of the Yangtse Kiang, and *Cimex* species have been thought by some to be possible vectors of kala-azar; this disease might be introduced into Nauru. Relapsing fever is also endemic in China, and *Cimex* may be an occasional vector, especially in conjunction with lice.

Summary.

1. The occurrence of *Cimex hemiptera* in Nauru is reported.

2. Its distribution seems at present to be mainly confined to the dwellings of the Chinese indentured labourers.

3. The remote possibility of the bug's acting as a vector of disease is discussed.

Bibliography.

D. B. Blacklock and T. Southwell: "A Guide to Human Parasitology", 1931, page 71.

A. M. B. Grant: "A Medical Survey of the Island of Nauru", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, January 28, 1933, page 113.

P. Manson-Bahr: "Manson's Tropical Diseases", Ninth Edition, 1931, page 836.

W. S. Patton and A. M. Evans: "Insects, Ticks, Mites and Venomous Animals", Part 1, 1929, pages 571 to 599.

C. H. Wedgwood: "Report on Research Work in Nauru Island, Central Pacific", *Oceania*, Volume VI, Number 4, June, 1936, page 372.

Reviews.

A SCIENTIST'S VIEW OF MEDICINE.

IN "Builders of Health" David Dietz, a writer with a journalistic touch, and a lecturer in general science at an American university, gives a dramatic rather than a critical account of many phases of modern medicine, ideas, not persons, being the *dramatis personæ*.[1]

The optimism of a lay scientist as to the actual and potential achievements of medicine is a fine corrective to the pessimism of the general practitioner, so often conscious of his failure.

The book is very readable, dealing very largely with the research side of medicine, especially on its biochemical side—hormones and enzymes and "factors" are the author's heroes. There are no less than eight chapters dealing with the ductless glands and their hormones, no less interesting to the medical man than to the general reader. The author gives some elementary anatomy and physiology, and a brief description of some of the clinical methods of medicine, as percussion, auscultation and the manometer, and a short account of the encephalograph for recording "brain-waves".

Digestion, nervous diseases, infectious diseases, the safety of motherhood, the deficiency diseases, the commoner killing diseases (the author's "Seven Horsemen of Death", amongst whom he counts accidents, especially motor car accidents), all have chapters devoted to them.

Interesting to the general reader who wishes to get some idea of the aims of medicine, this book would be a valuable present to the commencing student of medicine, with its bird's-eye view of some of the possibilities which his chosen profession offers him.

PUBLIC AND PERSONAL HYGIENE.

THE medical officer of health who requires for his shelves an up-to-date work of reference on public and personal hygiene, will find in the sixth edition of "A Synopsis of Hygiene", by Jameson and Parkinson, a very useful addition to his library.[2]

This edition is not merely a reprint of the previous (fifth) edition, which appeared as recently as 1936. The sections dealing with occupation and health, hospitals, maternal welfare and milk have been completely recast, and there have been many minor alterations. The volume has been increased slightly in size, but is still convenient and easy to handle. It is in reality more than a mere synopsis. Terse in style, it covers the whole range of public health and personal hygiene without sacrificing essentials to brevity. Much use is made of references to current literature, and these are grouped, not at the end of each chapter but at the close of each section, in parentheses, a much handier arrangement.

The ten chapters follow the usual arrangement; but a noteworthy feature of the volume is the collection of five appendices, all containing a mass of information not ordinarily made so readily accessible. The print is clear and the work is well indexed.

[1] "Builders of Health", by D. Dietz; English edition revised by A. W. Haslett; 1939. London: George Allen and Unwin Limited. Demy 8vo, pp. 351, with illustrations. Price: 12s. net.

[2] "A Synopsis of Hygiene", by W. W. Jameson, M.A., M.D., F.R.C.P., D.P.H., and G. S. Parkinson, D.S.O., M.R.C.S., L.R.C.P., D.P.H.; with a section on personal hygiene by G. P. Crowden, D.Sc., M.R.C.S., M.R.C.P.; Sixth Edition; 1939. London: J. and A. Churchill Limited. Demy 8vo, pp. 695, with 16 illustrations. Price: 21s. net.

The Medical Journal of Australia

SATURDAY, AUGUST 5, 1939.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

WADE HOUSE.

For long it has been recognized that patients who are suffering from grave or obscure illness receive by far the most complete investigation and treatment if they are admitted to a well-equipped modern hospital. The reasons are obvious. Treatment of obscure conditions cannot be satisfactorily carried out unless they are understood—a diagnosis, the correct diagnosis, has to be made. And to this end the attendant physician or surgeon often has to call to his aid the pathologist, the biological chemist, the bacteriologist or the radiologist, and possibly the specialist who has to deal with disorders of the special senses. It is quite true that work of the highest order can be done, and often is done, without the aid of these specialized and skilled investigators. But it is equally true that occasions will arise when the help of all of them will be necessary. We have often found it necessary to deplore the too great reliance placed by some clinicians on special aids to diagnosis. The fact remains, however, that in a modern hospital, equipped as it is with the newest and most complete apparatus obtainable, and staffed by experts who have spent most of their professional lives in the study of their specialty, special departments are housed under one roof and experts are ready to lend their aid at almost a moment's notice. Small wonder is it, then, that in grave situations both medical attendant and patient prefer to have investigation and treatment carried out in such an institution.

That patients should receive treatment at the hands of the medical attendant of their unfettered choice is their inalienable right. The medical profession has always held that nothing should be allowed to take this right from them. At the same time it has to be recognized that the large public hospitals must have their special staffs; and patients admitted to the wards of these hospitals must necessarily be content to be treated by the honorary officers. In this unavoidable state of affairs the honorary officer should take care that the patient on discharge from hospital is sent back to his own medical attendant. In smaller hospitals and in many country hospitals the matter is different and it is often possible for the general practitioner to treat his patient in a public ward. At the moment we are concerned with hospital practice in New South Wales; and attention must be drawn to the declared hospital policy of the New South Wales Branch of the British Medical Association. In this policy the Branch asserts the right of medical practitioners to receive payment for their services in public hospitals, but advises its members to continue the service of honorary attendance to public bed patients, provided that no patient is admitted to a public bed who shall be judged by the hospital executive as being able to pay in part or in whole for medical treatment. In view of the present trend of hospital practice, certain advantages of which have already been described, the Branch declares that public hospitals should provide accommodation for all classes of patients according to their means—public bed, intermediate and private. It holds that public

hospitals should be open to all classes of the community and that each person should pay according to his means. Finally it asserts that all reputable practitioners should be entitled to render services to intermediate or private patients in all hospitals. In enunciating these views the Branch is upholding the contention that the patient should be allowed to choose his own medical attendant.

Up to the present time, as medical practitioners are well aware, the aims of the New South Wales Branch of the British Medical Association in regard to intermediate and private beds attached to large hospitals in the metropolitan area of Sydney have not been attained. They will therefore welcome the establishment at the Royal Alexandra Hospital for Children of Wade House, which was formally declared open on July 8, 1939, by His Excellency Lord Wakehurst, Governor of New South Wales. The speeches made at this ceremony are reproduced in another place in this issue, and these, together with the pictures and the description of the building, show not only the enthusiasm and work which the members of the hospital board have put into the creation of this unit, but also their desire to serve every section of the community. The public should note that, although the money for the establishment of this intermediate and private block has been found by the Hospitals Commission of New South Wales, the board of the hospital has undertaken to pay back the money over a period of years out of its earnings. Both the public and the medical profession must realize that they have at their disposal an institution, wonderfully complete and up to date in every respect, in which any reputable practitioner, enrolled and accepted on the register of the hospital, may attend his own intermediate and private patients. The medical profession, too, will appreciate the graceful compliment paid by the Board of Management in the choice of a name to one who has given long and faithful service to the hospital and who has done much to further the art and practice of surgery. The hospital board has done its part; the success of the venture will depend on the use which the members of the medical profession make of what has been provided for them.

Current Comment.

ACUTE PANCREATITIS.

IN these columns on March 9, 1935, the subject of acute pancreatic necrosis was discussed in the light of a communication by J. R. Parry and K. Murray. Both the clinical features and the ætiology were considered and attention was drawn to the work of Opie, Eggers, Kaufmann, Chamberlain, Archibald and von Bergmann. Though this is a rare condition, it calls for prompt diagnosis when it does appear; and the fact that its clinical features may resemble those of intestinal obstruction or other abdominal emergency makes a knowledge of its manifestations and treatment of great importance to medical practitioners.

An interesting discussion on the diagnosis and treatment of acute pancreatitis took place at a recent meeting of the Section of Surgery of the Royal Society of Medicine.[1] The views on treatment expressed by the three speakers were so divergent that they should be recorded; and inquiry among Australian surgeons has yielded equally divergent views. John Morley, who spoke first, pointed out that it was impossible to avoid a preliminary survey of pathogenesis. He referred to some of the authors mentioned in this journal in 1935 and also to work by Rich and Duff published in 1936. As would be expected, he drew attention first of all to the frequent association of the disease with gall-stones. He stated that in a series of cases collected by Schmieden and Sebennig in 1927, 69·8% of the patients had gall-stones. He has had experience of 17 cases of his own, and 11 of the patients had gall-stones. He makes the common mistake of expressing this number in a percentage (64·7%), a procedure which, from the statistical point of view, is quite unjustified in so small a series. Summarizing the evidence, he states that in some 60% of cases in which gall-stones or other disease of the biliary tract is present, reflux of bile or obstruction of the pancreatic duct may be responsible for the escape of active trypsin into the interstitial tissue of the pancreas. He omits consideration of such rare causes of duct obstruction and infection as the intrusion of a round worm or the pressure of a duodenal diverticulum, and also the blood-borne infection by which the pancreas is occasionally infected in mumps. In discussing the remaining 40% of cases he refers to the peculiar hyaline necrosis of the walls of the pancreatic arteries and veins in acute pancreatitis described by Rich and Duff. He regards their evidence as convincing when they conclude that this necrosis is the initial lesion giving rise to interstitial hæmorrhage and that it is due to the action of active trypsin that has escaped from the acinar system under pressure. Rich and Duff produced the same vascular necrosis

[1] *Proceedings of the Royal Society of Medicine*, April, 1939.

and resulting hæmorrhage in the subcutaneous tissue of dogs by injecting active trypsin; bile injected in a similar way gave no such result. Morley also points out that in an endeavour to explain how the escape of trypsin might be accounted for in the absence of causes external to the pancreas, such as gall-stones, Rich and Duff drew attention to a proliferative metaplasia of the pancreatic duct epithelium which is often found. They found this metaplasia in 13 of 24 cases of acute pancreatitis. Rich and Duff suggest that the metaplasia causes obstruction to the ducts and so may be responsible for the escape of trypsin into the interstitial tissue of the gland. H. Blacow Yates, the second speaker at the Royal Society of Medicine discussion, referred to the views of Gregoire, Duval and Brocq, who showed that the injection of horse serum under local anæsthesia into the pancreatic vein of a sensitized animal produced acute œdema of the pancreas. They suggested that a condition of pancreatic apoplexy was produced and that there developed an extreme vaso-dilatation of the capillaries of the organ with subsequent hæmorrhage. Gregoire holds that visceral apoplexy is a result of stasis due to vaso-dilatation caused by irritation of the vegetative nervous system. According to him, the escape of glandular ferments and steatonecrosis in acute pancreatitis are secondary developments, as in any infection. Gregoire and his co-workers, we are told, insist that the condition shall not be known as acute pancreatitis, but as pancreatic apoplexy or acute pancreatic necrosis, a term often used in medical literature. These views on the causation of the condition in the absence of pathological change in the gall-bladder are of the greatest interest. Australian surgeons from whom inquiries have been made on this subject always lay stress on the common association of gall-stones with it. We should like to see some attempt made to discover what their actual experience of this association is. Balcombe Quick, of Melbourne, writing in *The Australian and New Zealand Journal of Surgery* of October, 1932, reported that gall-stones were present in 30 of 49 cases reviewed by him.

In discussing the diagnosis of the condition, Morley said that he agreed with Moynihan, who stated in 1925 that few clinical pictures were clearer than those shown by the more severe cases of this condition. He described the elderly, florid patient, with a high blood pressure and perhaps a taste for alcohol and good living, who was attacked suddenly by pain after a full meal. He said that the pain in the epigastrium was "of savage intensity" and soon became "extreme agony". He also said that it was singularly resistant to morphine. The transverse colon in this condition soon becomes paralysed (the course of the sympathetic nerve supply to this portion of the gut will make the reason for this obvious) and distended with gas; abdominal distension is thus an early manifestation. Balcombe Quick in 1932 wrote that pain was the one symptom more than any other which was worthy of the closest attention as furnishing most valuable guidance. He remarked that if failure of relief by morphine could be taken as an index of severity, it was doubtful whether a greater agony existed. Yates, in the Royal Society of Medicine discussion, described the pain as intense. W. H. Ogilvie, however, was emphatic in holding opposite views. He spoke as an assistant surgeon, and remarked that surgeons were called to abdominal emergencies when they were "senior residents or junior honoraries"; they were not asked to open discussions until they had reached eminence. They then brought to the task a riper judgement, but a less vivid because less recent experience; they might, he added, be excused if they refreshed themselves "at the gushing fountain of Continental literature". He would not agree with Morley's views either on the character of the pain or on the avoidance of operation (of which more later). Ogilvie declared that the pain in acute pancreatitis was a "nasty belly-ache" but not agony. He thought that it was the moderate severity of the pain, when contrasted with the critical condition of the patient, that gave the clinical picture on which diagnosis must be based. We must conclude that these speakers had in mind the acute fulminating type and not the cases of lesser severity, approximating to what Ogilvie called statistical pancreatitis, diagnosable by the well-known diastase test. It is therefore somewhat difficult to reconcile these divergent statements. Admittedly one clinician's idea of agony may be very different from that of another; but there is a great difference between a pain of "savage intensity" becoming "extreme agony" and a "nasty belly ache". Ogilvie did not say how many cases he had seen; and it would not appear that his gibe at his seniors' having refreshed themselves "at the gushing fountain of Continental literature" was justified. Morley quoted cases of his own; Ogilvie did not. Moreover, it is, to overseas readers, somewhat refreshing to see British observers quoting work from the Continent. They have a reputation, possibly unjustified, for being unduly conservative in this regard.

The question of treatment in acute pancreatitis is bound up with that of diagnosis. The clinical picture and the use of the diastase test are often sufficient for an accurate diagnosis to be made. Morley stated that so long as acute pancreatitis was regarded as undiagnosable save by a lucky guess there was an unanswerable argument for an early diagnostic incision, for otherwise some other condition might be allowed to proceed to a fatal result. Morley does not suggest that exploration is "entirely outmoded" in this disease, but he holds that the necessity for it grows steadily less with the increase in knowledge. Balcombe Quick wrote as follows:

> The picture often enough appears to be an anomalous and contradictory one, but these very features should arouse suspicion. If the possibility of the disease be

borne in mind, and if the type and situation of the pain and tenderness be carefully elicited, very few cases will be missed. If the Wohlgemuth test for urinary diastase be carried out in all acute lesions of the upper part of the abdomen, none will be missed.

Morley asks what, apart from diagnosis, can we achieve by early operation? Plainly, he remarks, we cannot undo the damage already done by the escaped trypsin and lipase. He holds that it is no more possible to drain the necrosed pancreas effectively, so as to prevent toxic absorption, than it is to drain a carbuncle before suppuration has occurred. He has grown equally sceptical of the value of early drainage of the gall-bladder or common bile duct. He suggests that when the diagnosis is clear treatment should be non-operative and should consist of the intravenous administration of saline solution to combat the circulatory collapse and toxæmia, with continuous gastric drainage by a Ryle's tube whenever vomiting is severe. When diagnosis is uncertain he holds that laparotomy should be done, but that the discovery of fat necrosis and a swollen hæmorrhagic pancreas should be the signal for a rapid retreat. "Most surgeons", he writes, "will prefer to leave a drainage tube down to the gland for a few days, since if it does no great good it cannot do much harm. The main indication for operation in cases that survive the first few days will be abscess formation, as shown by a rising temperature, leucocytosis and local swelling. Later still, if the acute symptoms have subsided, the biliary tract should be explored for gall-stones to prevent a further attack." This may be taken as setting out the conservative treatment. Yates, in his contribution to the discussion, referred to the reports from Continental centres "of the almost incredible results following purely conservative measures". He predicted a middle course between operative and conservative treatment. He would reserve surgery for those cases in which recovery has occurred and in which investigations point to some coexisting lesion of the biliary tract. Minimal surgical measures might still be present in the later stages of the disease itself: (i) In those cases in which bile and urine had been found, simple gall-bladder drainage under local anæsthesia should be done if satisfactory progress was not taking place. (ii) When medical measures had not delayed the necrosis, infection had been added and suppuration was suspected, pancreatic drainage would be necessary. (iii) When duodenal suction, repeated enemata and similar measures had failed to overcome the intestinal distension and irritative peritonitis, it might be necessary to insert a pelvic drain under local anæsthesia. W. H. Ogilvie would not listen to conservative treatment. He said that if attention was confined to the genuine acute abdominal emergencies, pathological and surgical principles demanded operation, and experience, he added, showed that operation gave the only chance. He gave no details of this "experience". He said that the statement that patients with acute pancreatitis did better when treated by expectancy than by surgery was based on figures rather than on pathology, on the authority of German writers rather than on the experience of British surgeons. He said derogatory things of German surgery, but forgot to include in his invective the Danish results of conservative methods quoted by Yates!

Inquiries from certain Australian surgeons have revealed a divergence of opinion. Some frankly favour operation in every instance, but several are inclined to accept the logical basis of conservative treatment and to adopt it though they have not had much experience of its results. The time may come when even such forthright surgeons as W. H. Ogilvie will change their views and their practice.

THE PREVENTION OF SILICOSIS BY METALLIC ALUMINIUM: A ROMANCE OF MEDICAL RESEARCH.

SEVEN years ago, J. J. Denny, W. D. Robson and D. A. Irwin, respectively a metallurgical engineer, the chief surgeon to a mining company in Ontario, and an assitant professor in the Department of Medical Research in the University of Toronto, undertook an investigation of silicosis. It was decided to expose animals to the dusty atmosphere of a mine in such a way as to duplicate as far as possible actual industrial conditions, and at that time fifty guinea-pigs were placed in the quartz-crusher house at a mine. A year later it was found that none of the animals had developed silicosis, although the dust in the atmosphere contained a great deal of free silica. This interesting observation led the investigators to an exhaustive study of the atmospheric gases at the mine, since they were familiar with the findings of W. E. Gye and W. J. Purdy in 1924, that it is the chemical action and not the physical presence of silica in the lungs that causes nodular fibrosis; and they sought to discover some agent which might have reduced the solubility of the siliceous particles, but all their experiments were fruitless. Next they turned to the impurities contained in the quartz and tried adding substances to silica to reduce its solubility. On March 4, 1936, Denny and Robson made the momentous discovery that the presence of small amounts of metallic aluminium almost completely prevented silica from passing into solution. Very soon a fresh animal experiment was commenced with thirteen rabbits; six were exposed to quartz dust for six months, at the end of which all had well-developed silicosis; the other seven were exposed for the same period to quartz dust with the addition of a trace of powdered aluminium and not one developed silicosis. This observation, with its far-reaching implications, was the crux of a preliminary report.[1] Denny, Robson and Irwin have since sought to explain the manner in which metallic aluminium prevents the

[1] *The Canadian Medical Association Journal*, July, 1937.

harmful effect of quartz in the tissues, to determine whether its action is local or systemic, and whether it possesses any injurious properties itself, and generally to discover the factors governing its action. Recently they have reported the further progress of their investigations.[1]

In the first place physical and chemical studies were planned and carried out with the aid of a physicist to determine the mechanism by which metallic aluminium reduces the solubility of siliceous materials. It was found that on its conversion into hydrated alumina it is able to do so in several ways, but chiefly by the deposition on the siliceous particles of an insoluble and impermeable coating. This coating was shown in collaboration with L. H. Germer and K. H. Storks, of the Bell Telephone Laboratories in New York, to be a gelatinous hydrated oxide of aluminium. Further experiments with aluminium compounds showed that some were fairly effective, but that none was so effective as the metallic powder in reducing the solubility of the quartz.

It is of interest at this point to digress and to review with the authors the observations of other recent writers on the modifying influence which shale and certain rocks seem to exert on the production of fibrosis caused by free silica, for the mode of action of these so-called "antidotal rocks" has been the subject of some speculation in the literature during the past year or so. The authors observed that the men working in the crusher houses of certain mines in Ontario do not develop silicosis although there is a high proportion of silica in the mill feed, and that animals exposed to the dust and taking large amounts of it into their lungs show no pulmonary fibrosis after twelve months of such exposure. Analysis of the rocks crushed at these mines showed them to contain much alumina.

In addition to the physical and chemical studies, the authors embarked on further experiments with rabbits. The first group of experiments consisted in the simultaneous exhibition of quartz and aluminium by different routes, and yielded no evidence of any systemic pharmacological action by the aluminium on the fibrosis induced by the quartz, which was the same as in control animals receiving the quartz alone. The next great group of experiments was devised and carried out to determine the amount of aluminium necessary to inactivate quartz in the tissues, first by injection of these substances together into rabbits and microscopic examination of the injected areas some months later, and next by exposure of animals for twelve hours daily to atmospheres containing quartz dust and varying proportions of powdered aluminium. It was found that there was a critical concentration of aluminium; less than this concentration was insufficient to prevent the nodular fibrosis resulting from injections of quartz, while greater concentrations were able to do so. It was found also that no animals whose lungs contained more than one part per hundred of metallic aluminium showed any evidence of silicosis after exposure to dust for periods up to seventeen and a half months. It was also deduced that aluminium powder for the prevention of silicosis should be of a particle size below 5 microns and free of grease. Most important of all, it was shown that for the prevention of silicosis it was not necessary for the aluminium dusting and the quartz dusting to be simultaneous; animals were exposed to aluminium dust for forty minutes daily and to quartz dust for twelve hours daily and did not develop silicosis. It was shown that the inhalation of aluminium dust in large quantities over long periods of time had no effect on the general health of the animals and caused no evident intoxication or damage to tissues, and finally that the amount of aluminium powder which should be dispersed in a dust-laden atmosphere to prevent silicosis was far below the amount required to produce an explosive mixture with air.

The authors are now engaged, aided and financed as they have been from the beginning by a great mining company, in the last stage of their colossal investigation, the endeavour to perfect practical methods of applying their discoveries to preventive medicine. This is the kind of research that must make medical history—boldly and scientifically planned, built upon observation and logically developed, technical difficulties and chemical problems being attacked and overcome with appropriate assistance as they arose. Soon surely we must see a successful conclusion; it will be eagerly awaited.

[1] *The Canadian Medical Association Journal*, March, 1939.

"KNOX'S MEDICAL DIRECTORY FOR AUSTRALIA."

WE wish to announce that "Knox's Medical Directory for Australia" will in future be compiled and published by the Australasian Medical Publishing Company, Limited, and that it is intended to publish the next edition early in January, 1940. Considerable work has been done in bringing the directory up to date, and the company will release the 1940 edition with confidence in its accuracy and detail. During the next few weeks each medical practitioner in Australia will receive a proof of the matter to be published under his name, and it is requested that careful attention be given to the checking of it, as it is only by the full cooperation of every practitioner that the accuracy of the directory can be assured. The directory has the approval of the Federal Council of the British Medical Association in Australia, and the publication of the information concerning each medical practitioner places him under no obligation or expense. Particular attention to the closing date for the return of proofs is requested. This will be stated clearly on each proof.

Abstracts from Current Medical Literature.

PATHOLOGY.

Serous Hepatitis.

AT a meeting of the Chicago Pathological Society, Hans P. Popper (*Archives of Pathology*, April, 1939) gave a report of investigations on serous inflammation made in collaboration with Eppinger. Capillaries are semi-permeable tubes which retain the plasma proteins. The first manifestation of capillary damage is a loss of semi-permeability with escape of proteins into the interstitial tissue. There the proteins, which are not reabsorbed by the blood capillaries and only gradually absorbed by the lymphatics, bind water and cause œdema. This process, called serous inflammation, is known to occur in serous cavities and subcutaneous tissue. The significance of this process in the soft interstitial tissue of the large parenchymatous organs has only recently been evaluated. Serous hepatitis is characterized by enlargement of the spaces between the liver cell cords and the blood capillaries—Disse's spaces. In human livers serous hepatitis is often present, even after an agony of longer than usual duration; but it is especially pronounced in the livers of persons who died of infections, intoxications, coma or burns. In animals it can be produced by allylformiate, a representative of substances isolated from purulent exudates or spoiled meat. Serous hepatitis can be produced in many animals. The development depends on the size of the reticulo-fibrous net in Disse's spaces. In man or dogs the space is large; in rabbits or guinea-pigs it is small, and therefore in these animals the tendency to serous hepatitis is not pronounced. In acute intoxications of dogs, besides the changes in Disse's spaces, there is œdema of the periportal fields and of the gall-bladder bed, both having lymph vessels with an abundance of fluid. All three signs together form the triad of serous hepatitis. To study the consequences of serous hepatitis, dogs were chronically intoxicated with allylformiate. After peroral or peritoneal introduction the effects were much more severe than with subcutaneous injection. As soon as twenty-four hours after administration of the drug there was complete destruction of the periphery of the lobules with rupture of the reticulo-fibrous framework. These ruptures, the most severe degree of capillary damage, stimulated proliferations. Thus finally a condition like cirrhosis developed in the course of two weeks. A cirrhosis very similar to that in man was produced in about six weeks by simultaneous use of small doses of allylformiate and bacteria given intravenously. Then localized destruction of the periphery of the lobules appeared, with formation of exudates and proliferation of the connective tissue. The rupture and occlusion of the communication between the bile capillaries and ducts explain the obstructive jaundice and, further, the proliferation of the smaller bile ducts, which is a result of stimulation by the rupture and attempts to reunite. In the human pathological process the complete triad of serous hepatitis is not common. It is typically present in beri-beri and in catarrhal jaundice, as far as can be judged from the clinical and *post mortem* observations in one case. Serous hepatitis is, because of the specific structure of the liver, the first response of the organ to any irritation, irrespective of the cause. Further than this, it may disappear entirely or it may be followed by destruction of the parenchymatous cells or rupture of the framework built by the connective tissue (cirrhosis).

The Xanthomatous Giant-Cell Blastoma of the Connective Tissue.

TH. FAHR (*Frankfurter Zeitschrift für Pathologie*, March, 1939) deals with the nodulous tumours which occur in close relation to joints, tendon sheaths, aponeuroses *et cetera*. They are usually described as being characterized by their hæmosiderin content, by the formation of a sarcoma-like tissue with many giant cells, and by the presence of so-called xanthoma cells. As to their nature, three different suggestions have been made. Some authors consider them to be granulomata, others regard them as hyperplasias of the reticulo-endothelial cells, and others again classify them as true (benign) blastomata. The author points out that one error is common to all these suggestions—the tendency to consider all these tumours as parts of one uniform group. That is not so. His examinations of a great number of such tumours show that we have to distinguish between three different groups. One group, the so-called symptomatic xanthomata, occur in connexion with disturbances of the lipoid metabolism; sometimes the cause is known, as in diabetes; often it is unknown. Another group is that of the lipoid granulomata, which should strictly be differentiated from the xanthomatous blastomata. There occur granulomata which have a close resemblance to the symptomatic xanthomata on the one hand and to the xanthomatous blastomata on the other. But in such cases it is possible to recognize the inflammatory nature of the cells composing the nodule. The third and most important group is formed by true blastomata. They have a certain relationship to the giant-cell tumours of the bone, but even a closer relationship to the common fibromata of the connective tissue. The author has been able to show in a number of cases he examined all transitory stages of the development of connective tissue from the fibroblast to the formation of broad collagenous bands, and from young mesenchymatous and epithelioid cells to giant cells. These young mesenchymatous cells are able to accumulate lipoids, and they have, for hitherto unknown reasons, a very strong tendency to do so at special sites of the body, as tendon sheaths and so on. As to the question of malignancy, the author points out that the presence of numerous young mesenchymatous cells has formerly often led to the diagnosis "sarcoma"; in other cases these cells, especially when occurring in more round forms, have been mistaken for inflammatory elements. Usually the examination of the whole tumour reveals its nature as an innocent tumour. Naturally it cannot be denied that occasionally such a tumour becomes malignant.

The Effect of Sympathectomy on the Development of Experimental Arterial Disease.

THE object of a paper by C. V. Harrison (*The Journal of Pathology and Bacteriology*, March, 1939) is to ascertain how far the incidence and severity of experimental arteriosclerosis are influenced by the fundamental state of the vessel wall, and in particular whether it is accelerated or delayed by relaxation of the media. Unilateral lumbar sympathectomy was performed on a series of rabbits. These were subsequently fed with large doses of cholesterol in oil. A control group received similar cholesterol treatment, but no operative interference. The vascular lesions on the side which had been operated on were more severe than on the opposite side. In the control animals there was no significant difference between the two sides. These results were confirmed by chemical estimation of the cholesterol in the excised vessels. It is concluded that sympathetic paralysis enhances the effect of cholesterol in producing vascular lesions.

Changes in the Musculature of the Appendix in Chronic Appendicitis.

IN a first article of a series dealing with the various clinico-anatomical forms of appendicitis, Jacques Goldner (*Archives of Pathology*, March, 1939) reports on the examination of the musculature of the diseased appendix. His results are as follows. In chronically inflamed appendices there are morphological deviations of the two muscular layers, with attentuation or thickening, disappearance and the production of supplementary fibres. Aberrant fibres appear ectopically, forming median coats, surrounding lymph follicles or lying in the fibrous capsule of the submucosa. The structural changes described here are frequently seen in chronic appendicitis, fairly frequently in the subacute inflammation that signalizes early chronic appendicitis, and very rarely in acute appendicitis and in normal conditions of the appendix. Their presence denotes past attacks that have stimulated the production of capillaries and histiocytes. They exist even when other cardinal signs

(notably those proper to the lymphoid apparatus and epithelium) have subsided. Functional changes in the form of abnormal contraction should correspond to these structural abnormalities of the musculature, which would in part explain the pathogenic mechanism of this disease. Abnormal contraction may be as important ætiologically as changes in the rigid connective tissue framework, which also shows lesions of past attacks. Aberrant fibres, as well as those that cause the thickening of one or the other coat, have a special histogenesis; their parent cell is the histiocyte, more particularly the adventitial cell of Marchand. Preformed or newly formed capillaries disappear. Although the majority of aberrant muscular structures appear to be permanent, others may fall prey to sarcolysis or to rearrangement. The lytic forces involved are supplied by histiocytes.

MORPHOLOGY.

Facial Asymmetry.

H. HESS (*Zeitschrift für Morphologie und Anthropologie*, Number 3, 1938) has studied facial asymmetry in embryos, in the new-born and in children. He finds that it increases slowly from the embryonic stage to the fourteenth year of life, and that the soft parts often parallel the skeleton in this respect. The course of development is exhibited by definite points of facial origin, which are fixed for each developmental stage, demonstrating a perceptible accentuation leading to a stronger asymmetry in later stages. The author gives information about the frequency of asymmetry of the right and left halves of the face as well as of some definite structures (ear, eye, mouth, facial axes), expressed as percentages. In general the facial height decreases with advancing age. Analysis of the figures indicates that the asymmetry tends to favour the right rather than the left side of the face.

Axillary Artery and Brachial Plexus.

RUTH MILLER (*American Journal of Anatomy*, January, 1939) has considered human variations of the arrangement of the brachial plexus and axillary artery in the light of the condition of these structures in other primates: lemurs, tarsius, New World monkeys, Old World monkeys and apes. Of 480 human bodies, 8% were found to present aberrations. There is a progressive decrease in complexity from the condition in lemurs to that found in apes and man; the arrangement in Old World monkeys is most typical of the primates in general, including such relationships as passage of a thoraco-acromial lateral thoracic stem superficial to a low pectoralis loop, and the passage of the brachial artery or radial artery superficial to the median nerve. Arrangements normal for other primates may appear as anomalies in man; for example, an artery passing superficial to the median nerve, or variation in the plexus associated with an aberrant axillary artery.

Unilateral Absence of the Premaxilla without Cleft Formation.

F. KOZLIK (*Anatomischer Anzeiger*, April, 1939) found in the palate of a sixty-year-old man an incisive papilla which corresponded in development to that of a seven-centimetres embryo. While the alveolar process of the left side exhibited the normal arched form, the right was straight, and carried as its first tooth the first premolar, three millimetres from the mid-line. A forwardly directed triangular gap on the right side of the palate extended above into the incisive canals. The nasal septum was deflected to the right. The lateral walls of the nose were normally developed and there was no cleft in the skeleton of the upper jaw. There was absence of the right upper incisors and canine, and of the body and the palatal and alveolar processes of the premaxilla; the frontal process appeared normal.

Fascia Dentata, Hippocampus, Subiculum and Neocortex.

A. A. ABBIE (*Journal of Comparative Neurology*, April, 1938) shows that in primitive mammals the *fascia dentata*, hippocampus and adjoining neocortex form a continuous layer of cells, which differentiates according to the character of each region. The fascia separates and migrates superficially to the hippocampal pyramids; there may or may not develop a break between hippocampus and neocortex at the subiculum. If a break occurs, it may be superficial or deep, and probably depends upon mechanical stress. The *fascia dentata* is the homologue of the hippocampus, and this in turn is the equivalent of all the neocortical cell laminæ. There is no support for the view that the fascia represents lamina IV only or that the hippocampus represents laminæ V and VI only of the neocortex, as has been suggested.

Blood Capillaries.

B. W. ZWEIFACH (*The Anatomical Record*, April, 1939) continues his investigations on the capillary system and confirms his previous observation that capillaries are of two types: either with or without muscular elements in their walls. The former are the direct arterio-venous channels normally employed during rest, and the author suggests that the muscular elements are required to sustain the higher pressures which these vessels have continually to withstand. The vessels without muscular elements are the true capillaries, which open up only during activity of the part. They leave the muscular capillaries at abrupt angles, sometimes in a direction the reverse of the normal flow; in the latter case the opening is guarded by an endothelial valve. The diameter of the dilated true capillaries depends upon the number of endothelial cells in their walls. During rest the walls of the true capillaries are impermeable to Congo red, but permit escape of the stain during the dilatation of activity. The author suggests that accumulation of metabolites in stagnant capillaries increases the permeability of the walls of these and so induces increased flow of blood through the vessel. The normal pressure in the small arterioles during rest is just sufficient to overcome the resistance of the vascular tree ahead through the muscular arterio-venous capillaries; when the resistance is increased during activity side channels open up through the true capillaries.

Morphology of the Human Tongue.

SHAFIK ABD-EL-MAFIK (*Journal of Anatomy*, January, 1939) compares the structure of the human tongue with that of other mammals. He finds that in addition to the usually described median septum there are in each half of the tongue a paramedian septum and a lateral septum. The former lies between the genioglossus medially and the styloglossus, hyoglossus and inferior longitudinal muscles laterally. The lateral septum lies between the inferior longitudinal muscle medially and the styloglossus and hyoglossus laterally. Medially it joins the paramedian septum; laterally it divides into medial and lateral lamellæ, which pass between these individual muscles. The substance of the lateral septum carries the lingual artery and possibly the lingual nerve; in its medial lamella runs the glosso-pharyngeal nerve, in its lateral lamella, the hypoglossal nerve. An anterior arch at the tip of the tongue is joined by the superior longitudinal muscle dorsally and by the inferior longitudinal, hyoglossus, styloglossus and genioglossus muscles ventrally. The superior longitudinal muscle is larger than is usually believed and has indirect attachment to the hyoid bone; the inferior longitudinal muscle is also attached to the hyoid bone.

Formation of the Umbilical Cord.

G. M. WYBURN (*Journal of Anatomy*, January, 1939) describes the formation of the umbilical cord in a series of human embryos. The cord is formed by the growth of lateral tissue plates, which extend from the allantoic stalk to the *septum transversum*. The cord cœlom is produced by extension of the endothelial lining into spaces in the cord tissue. Extra-embryonic migration of the gut is associated with the extra-embryonic position of the yolk sac; its return is determined by "negative" intraabdominal pressure. The cord cœlom is obliterated by proliferation of the dense fibrous tissue at the embryonic attachment of the cord; this tissue contributes also to the *linea alba* above and below, and to the rectus sheath on each side. Congenital umbilical hernia depends upon maldevelopment of the cord or deficiency in the neighbouring parietes; this in turn depends upon some fault in the union of the primary and secondary mesoderm at the embryonic rim.

British Medical Association News.

ANNUAL MEETING.

THE annual meeting of the South Australian Branch of the British Medical Association was held at the Prince of Wales Lecture Theatre, University of Adelaide, on June 28, 1939, DR. P. T. S. CHERRY, the President, in the chair.

Annual Report and Balance Sheet.

The annual report of the council for the year ending June 30, 1939, and the balance sheet were presented and adopted on the motion of Dr. M. Erichsen, seconded by Dr. F. St. John Poole. The balance sheet is published herewith; the annual report is as follows.

Election.

At the annual meeting held last June, officers and members of the council were elected as follows:

President: P. T. S. Cherry.

Vice-President: M. Erichsen.

Honorary Medical Secretary: C. B. Sangster.

Honorary Treasurer: F. St. John Poole.

Ordinary Members of the Council: R. G. Burnard, J. M. Dwyer, D. Macdonald Steele, R. J. Verco.

At the council meeting held on July 7, 1938, the following subcommittees were appointed:

Scientific: S. R. Burston, P. T. S. Cherry, J. M. Dwyer, M. Erichsen, F. Ray Hone, C. B. Sangster, R. J. Verco.

Contract Practice: R. G. Burnard, P. T. S. Cherry, M. Erichsen, F. St. John Poole, A. F. Stokes, D. M. Steele, R. J. Verco.

Library: P. T. S. Cherry, F. Ray Hone, Sir Henry Newland, C. B. Sangster.

Parliamentary Bills: P. T. S. Cherry, J. M. Dwyer, F. St. J. Poole, A. F. Stokes, R. J. Verco.

Revision of Rules: Sir Henry Newland, E. Britten Jones.

Ethical: S. R. Burston, R. G. Burnard, P. T. S. Cherry, F. Ray Hone, F. St. J. Poole, A. F. Stokes, C. B. Sangster, R. J. Verco.

Meetings.

The Council.—The council has met on twenty-three occasions, the attendance being:

S. R. Burston	18	Sir Henry Newland	22
R. G. Burnard	21	F. St. J. Poole	19
P. T. S. Cherry	22	A. F. Stokes	21
J. M. Dwyer	22	C. B. Sangster	18
M. Erichsen	21	D. M. Steele	10
F. Ray Hone	13	R. J. Verco	20
R. E. Magarey	5		

Scientific Subcommittee.—The Scientific Subcommittee has met twice, the attendance being:

S. R. Burston	2	F. Ray Hone	2
P. T. S. Cherry	2	C. B. Sangster	2
J. M. Dwyer	2	R. J. Verco	2
M. Erichsen	2		

Contract Practice Subcommittee.—The Contract Practice Subcommittee met once, the attendances being:

R. G. Burnard.	F. St. J. Poole.
P. T. S. Cherry.	A. F. Stokes.
M. Erichsen.	

Library Subcommittee.—The Library Subcommittee met on three occasions, the attendance being:

P. T. S. Cherry	3	Sir Henry Newland	3
F. Ray Hone	3	C. B. Sangster	3

Parliamentary Bills Subcommittee.—The Parliamentary Bills Subcommittee met once, the attendance being:

P. T. S. Cherry.	A. F. Stokes.
J. M. Dwyer.	R. J. Verco

Ethical Subcommittee.—The Ethical Subcommittee met on five occasions, the attendance being:

S. R. Burston	3	F. St. J. Poole	5
R. G. Burnard	5	C. B. Sangster	4
P. T. S. Cherry	5	A. F. Stokes	4
F. Ray Hone	3	R. J. Verco	5

Monthly General Meeting.

Six scientific meetings were held during the year. The country meeting was held this year at Victor Harbour on October 1, 1938, and the council tenders its thanks to Dr. F. J. Douglas and Dr. G. S. Shipway for their assistance in arranging matters for this meeting. Owing to unavoidable difficulties in connexion with arrangements for the February and April meetings, it was found necessary to cancel them. Through the courtesy of the Deputy Director of Medical Services, Fourth Military District, an invitation was extended to all members of the Branch to attend a lecture by Major-General R. M. Downes, C.M.G., Director-General of Medical Services of the Australian Military Forces, on "Functions of the Army Medical Corps: New Conceptions: What we have to Prepare in Australia". The lecture was delivered on March 6 and a representative number of members attended. The following programme was carried out during the year:

1938.

July 28.—Clinical demonstrations by some of the members of the Adelaide Hospital and Children's Hospital Staff, at the Massage Department, Adelaide Hospital.

August 25.—Paper by S. R. Burston, "Prevention and Treatment of Casualties due to Poison Gases Used in Warfare", followed by talk by Lieutenant-Colonel V. P. H. Stantke, O.B.E., on "The Tactical Use of Gas in Warfare".

October 1.—Country meeting at Victor Harbour. Discussion on "The Clinical Application of Some Recent Pharmacological Products". (Discussion opened by J. R. Beard, K. S. Hetzel, G. E. Jose.)

October 27.—Paper by R. M. Glynn, "Diagnosis and Treatment of Hoarseness and Aphonia". (Discussion opened by H. W. Wunderly.)

November 24.—Paper by A. R. Southwood, "Dietetics: Some Basic Principles and their Application in Treatment". (Discussion opened by R. G. Burnard.)

1939.

March 30.—Paper by F. Ray Hone, "Diagnosis and Prognosis of Glycosuria". (Discussion opened by G. A. Lendon.)

May 25.—Listerian Oration by Dr. Robert Fowler, of Melbourne, his subject being "The Health of the Fœtus, or True National Insurance".

Listerian Oration.

The council invited Dr. Robert Fowler, of Melbourne, to deliver the Listerian Oration this year. The invitation was accepted by Dr. Fowler, who delivered the oration on May 25, his subject being "The Health of the Fœtus, or True National Insurance". There was a good attendance and the council desires to record its sincere thanks to Dr. Fowler for his brilliant oration.

Membership.

The membership of the Branch is 396, an increase of seven on the previous year. The number of new members elected was 23, the balance representing transfers "in and out", deaths *et cetera*.

It is with deep regret that we record the deaths of the following: H. W. Broadbent, C. T. Cooper, Dean Dawson, C. E. Dorsch, B. S. Muecke, W. D. Walker.

Representation on Boards et cetera.

Medical Board of South Australia: H. H. E. Russell.

Dental Board of South Australia: L. C. E. Lindon.

Nurses' Board of South Australia: S. R. Burston.

Metropolitan Infectious Diseases Hospital Board: H. H. E. Russell, G. R. West.

Australian Aerial Medical Services Council: A. F. Stokes.

Executive Council Mothers and Babies' Health Association: D. G. McKay.

Executive Committee for Protection of Civil Population against Gas Attack: F. H. Beare.

State Committee for Coordination of Medical Arrangements for Civilians and the Services: M. Erichsen, C. Yeatman.

Annual Meeting, Aberdeen, July 21-25, 1939: Representative, J. Stanley Verco; delegates, G. M. Hone, H. A. McCoy.

Representative on Central Council of the Association: Dr. Isaac Jones.

Federal Council of the British Medical Association in Australia: Sir Henry Newland, A. F. Stokes.

Federal Council Contract Practice Committee: R. John Verco.

Work of Sections.

Eye, Ear, Nose and Throat Section.—This section held four meetings, the average attendance being ten. There are sixteen members of this section, an increase of three on the previous year.

Surgery.—Four meetings have been held during the year. There are 42 members of this section, an increase of one on the previous year.

Anæsthetics.—There are 12 members connected with this section, six more than last year. Three meetings have been held during the year, the average attendance being six.

Clinical Medicine.—There are 70 members in this section, and during the year five meetings were held. The membership increased by 30 during the year.

History.—This section comprises fourteen members, and three meetings were held during the year.

Lodge Practice.

No alteration in rates and conditions has been made during the year. It is the intention of the council, however, to review the present lodge agreement with a view to making certain alterations and provisions as soon as practicable. It is felt that until a definite conclusion has been reached regarding national health insurance it would be inadvisable to alter the existing agreement.

Adelaide Permanent Post-Graduate Committee.

The committee arranged a refresher course from May 22 to 27. Included in the course were the "E. C. Stirling" lectures, given by Dr. W. A. Hailes, of Melbourne. Members are aware that some time ago negotiations had taken place between the council of the Association and the university council, with the idea of the post-graduate committee and the university being more closely associated with post-graduate work in medicine; but the university decided to confine itself to instruction in honours and post-graduate work, whilst making available every facility to the committee for continuing its own refresher course. During the year the council decided to again approach the university council, in order to ascertain if the university would be willing to reopen negotiations with the Association regarding the establishment of a board of post-graduate studies within the university. The matter has been referred to a committee by the university council. The council of the Branch has agreed to the addition of two representatives of the Institute of Medical and Veterinary Science on the committee.

Workmen's Compensation Act.

Under this act certain doctors only are appointed certifying medical practitioners. This has caused inconvenience and loss of time to workmen, besides embarrassment to other practitioners who have issued certificates. This matter was taken up with the Government some time ago, and a suggestion was made by the council that all members of the South Australian Branch of the British Medical Association should be appointed certifying practitioners under the act. A promise was made by the Government that the matter would receive attention when the legislation for the next session of Parliament was under consideration; but so far no action has been taken in this direction. The council has again approached the Government and asked for the appointment as certifying medical practitioners under the *Workmen's Compensation Act* of all medical practitioners who are willing to act in this capacity.

Grant by Parent Association to Federal Council.

During the year the Parent Association made a grant of £1,000 to the Federal Council toward the expenses of the council in connexion with national insurance.

Recognition of Chiropodists.

Representation has been made by the South Australian Society of Chiropodists, Incorporated, to the council, that the Association should assist the society by giving permission to members of the British Medical Association to lecture to members of the society, and that a member of the British Medical Association should act on the examining board of the society. The Pharmaceutical Society of South Australia has also approached the council and asked for its cooperation regarding the formation of a Pharmaceutical Chiropodist Group, so that discipline and control can be effectively exercised in respect of the practice of chiropody by chemists. After long deliberation the Parent Association has accorded a measure of recognition to approved chiropodists who accept certain definition of their work. The council has appointed a special subcommittee to consider this matter and has had frequent correspondence with the Parent Association. The committee still has this matter under consideration, and in the meantime further inquiries have been made to ascertain how the arrangement made by the Parent Association is working, its effect on the profession, also with a view to the possible introduction of a similar recognition in South Australia. A conference between the special subcommittee and representatives of the two above bodies is to be arranged shortly.

Library Agreement.

The agreement with the Council of the University of Adelaide regarding the medical library of the university library has been renewed with certain alterations until the end of the year 1943. Under the agreement the Association will make an annual grant of £150 to the university for the purchase of medical books and periodicals, and for binding such publications. Members have been advised by circular letter regarding the rules that now apply concerning the loan of books and periodicals from the library.

Medical Witness Fees.

During the year conferences have taken place between the Law Society of South Australia, Incorporated, and representatives of the council concerning medical witness fees, more particularly in respect of fees where free legal aid is given to persons under the Poor Persons Legal Relief Scheme. It has been suggested by the Honourable the Attorney General that the South Australian Branch of the British Medical Association might be willing to cooperate with the Law Society for the better administration of the Poor Persons Legal Relief Scheme. The council has this matter under consideration, and a further conference with the Law Society will be arranged at an early date.

Physical Fitness Campaign.

Following a report by the National Health and Medical Research Council submitted to the Federal Government, a movement was organized for a national fitness campaign. The Federal Council of the British Medical Association

gave its support to the campaign, and requested the Branch councils in the various States to support the movement. The council of the South Australian Branch is whole-heartedly in accord with the campaign, and has forwarded a letter, which has been published in the Press, indicating the attitude of the medical profession in South Australia towards the campaign.

Registration of Foreign Medical Practitioners.

The council has given further consideration to the matter of the registration of foreign medical practitioners, and discussions have taken place with representatives of the Medical Board.

It has been decided to approach the Medical Board, setting out the views of the council and suggesting that the *Medical Act* of South Australia be amended on similar lines to the *Medical Act* of New South Wales, so that alien graduates, whether registered in the United Kingdom or not, and holding permission from the Home Office to practise, must do the final three years' clinical attendance and examinations at an Australian university, or if holding a senior qualification in medicine or surgery from a British university or college, same to have been obtained after at least two years' clinical attendance at that university or college.

Organization of the Medical Profession in Australia.

The council has advised the Federal Council that it is in favour of the Federal Council taking steps to secure greater autonomy if possible. This would give the necessary power for the suggested organization of the profession in Australia, but nothing can be done until all the Branches in Australia are incorporated.

Pensions for Early Sufferers from Tuberculosis.

The council is in sympathy with a movement to secure more equitable arrangements in regard to pensions for early sufferers from tuberculosis, and has written to the Federal Council with a view to approaching the Federal Government in order to seek adequate pensions for such persons.

National Health Insurance.

This matter has occupied the attention of the council very considerably during the year, and five special council meetings have been held in connexion with it. It is a matter of regret that a final decision has not been arrived at. Various proposals and schemes have been considered and placed before members at special general meetings, and the resolutions passed at those meetings have been forwarded to the Federal Council. The withholding of a report from the Royal Commission appointed by the Federal Government has caused a great deal of disappointment, and the Federal Council has been asked to urge the Federal Government to publish the findings of the commission.

At the last special general meeting certain proposals to serve as a basis for discussion with representatives of the Government were considered, but it was felt that until further information is supplied by the Government members could not express any opinion on the proposals. There still exists much uncertainty as to the future policy of the Federal Government, and it is the intention of the Federal Council to issue at an early date a statement dealing with the whole question. Owing to the many and various schemes suggested, it has not been easy to arrive at definite conclusions, but the council has at all times had in mind the interests of the members of the Branch in dealing with this matter, and has done the best to protect those interests.

Members will all join in feelings of profound regret at the air disaster by which the legal representatives of the Association lost their lives, and later the death of the Chairman, Judge Dethridge. Messages of sympathy on behalf of members have been sent to the relatives of the deceased.

Income and Expenditure Account for Year ended December 31, 1938.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To British Medical Association, London	464 0 3		By Interest		11 8 9
„ The Medical Journal of Australia	360 10 0		„ Dividend on Preference Shares in the British Medical Hall Company Limited		45 0 0
		824 10 3	„ Subscriptions—		
„ Library Subscriptions		68 15 0	City	1,058 10 6	
„ Federal Council Capitation Fees		39 12 0	Country	455 13 4	
„ Postages and Telegrams	29 8 1		Accrued	65 5 0	
„ Exchange	1 17 0				1,579 8 10
„ Stationery and Printing	44 11 8		„ Medical Certificate Books		0 7 3
„ Telephone	32 18 0				
„ Rent	46 1 3				
„ General Expenses	58 16 9				
„ Depreciation	9 0 0				
„ Lister Medal	0 10 0				
		223 2 9			
„ Salary		400 0 0			
„ Balance transferred to General Fund		80 4 10			
		£1,636 4 10			£1,636 4 10

Library Fund Account, December 31, 1938.

	£ s. d.		£ s. d.
To Adelaide University	65 0 0	By Balance brought down, December 31, 1937	485 7 9
„ Depreciation	7 0 0	„ Interest	4 10 0
„ Balance	486 12 9	„ Transfer from Income and Expenditure Account	68 15 0
	£558 12 9		£558 12 9

General Fund Account, December 31, 1938.

	£ s. d.		£ s. d.
To Balance	3,054 12 2	By Balance brought down, December 31, 1937	2,974 7 4
		„ Income and Expenditure Account	80 4 10
	£3,054 12 2		£3,054 12 2

Balance Sheet as at December 31, 1938.

Liabilities.	£ s. d.	£ s. d.	Assets.	£ s. d.	£ s. d.
To Subscriptions paid in advance		140 12 0	By Plant and Fittings	79 0 0	
„ British Medical Association, London—			*Less* Depreciation	9 0 0	
Paid Subscriptions	27 8 3				70 0 0
Unpaid Subscriptions ..	21 19 6		„ The British Medical Hall Company Limited, Share Account		2,310 0 0
		49 7 9	„ Library Account—		
„ The Medical Journal of Australia—			Delineascope	27 0 0	
Paid Subscriptions ..	16 0 0		Projector	38 0 0	
Unpaid Subscriptions ..	16 0 0			65 0 0	
		32 0 0	*Less* Depreciation	7 0 0	
„ Library Fund		486 12 9			58 0 0
„ Federal Council		39 12 0	„ Savings Bank Library Account		232 16 9
„ Sundry Creditors		55 17 8	„ Lister Medals and Dies		16 13 4
„ National Health Insurance Emergency Fund		603 8 0	„ Subscriptions Owing		191 15 7
„ National Bank of Australasia, Limited		41 9 2	„ Stocks—		
„ General Fund		3,054 12 2	Hospital Forms	0 15 7	
			Medical Certificate Books ..	2 5 0	
			Stationery	10 0 0	
					13 0 7
			„ The British Medical Hall Company Limited		168 6 9
			„ Lister Oration Account		34 14 9
			„ Sundry Debtors		93 3 6
			„ Cash—		
			Commonwealth Savings Bank	236 10 0	
			Savings Bank of South Australia	455 1 7	
			In Hand	20 0 3	
					711 11 10
			„ Savings Bank, National Health Insurance Emergency Fund		603 8 0
	£4,503 11 1				£4,503 11 1

WALTER C. DOBBIE, Secretary. F. ST. JOHN POOLE, Honorary Treasurer.

I report that I have examined the books and vouchers of the British Medical Association as produced to me for the year ended December 31, 1938, and that in my opinion the above balance sheet correctly sets forth the financial position of the Association as at the above date and as shown by the books.

C. W. L. MUECKE,
Chartered Accountant (Australia),
Auditor.

June 1, 1939.

Teaching of Obstetrics and Gynæcology at the University.

The council has given consideration to the teaching of obstetrics and gynæcology at the university. It is felt that the time has arrived when the Adelaide University should fall into line with other Australian universities in the appointment of a whole-time professor or director of obstetrics and gynæcology. A subcommittee was appointed by the council to inquire into and report on the matter, and conferences took place between the committee and the president of the committee of the Queen's Home, which, it is understood, would favourably consider such an appointment. Following a report by the committee a letter has been submitted to the university setting out the views of the council, and a reply has been received from the university advising that the matter was receiving consideration and that a committee has been appointed to examine the situation and report.

New Rules and By-Laws.

Arrangements are being made for the printing in draft form of the new rules and by-laws, a copy of which will be forwarded to each member. A general meeting will be called by the council at an early date for the consideration and final adoption of same.

Place of Meetings.

The council has made arrangements for future monthly meetings to be held in the lecture theatre, Institute of Medical and Veterinary Science, Frome Road.

General Remarks.

The particulars given above are a brief summary only of the work of the council during the year, which has been one of anxiety and strenuous activity. Many other matters have been considered, and the increased number of meetings

of the council bear this out. In addition there has been a number of special committee meetings to consider various matters and report to the council. This has placed a great amount of extra work on the lay secretary, and our sincere thanks go to him for his earnestness, loyalty and devotion to duty that the past year has needed more than ever before.

In conclusion I desire to thank members of the council for their loyal support during my presidential term, and to add that, to me, the year has been one of pleasure and, I trust, one of progress and success.

(Signed) P. T. S. CHERRY,
President.

Election of Office-Bearers.

Dr. Cherry announced that the following office-bearers had been elected for the ensuing year:

President: Dr. M. Erichsen.

Vice-President: Dr. R. John Verco.

Honorary Treasurer: Dr. F. St. John Poole.

Honorary Medical Secretary: Dr. C. B. Sangster.

Members of Council: Dr. C. F. Drew, Dr. James Riddell, Dr. L. A. Wilson.

Induction of President.

Dr. P. T. S. Cherry then introduced the President for the ensuing twelve months, Dr. M. Erichsen.

President's Address.

Dr. P. T. S. Cherry, the retiring President, read his address (see page 193).

Votes of Thanks.

A vote of thanks was accorded to Dr. Cherry for his address, on the motion of Dr. R. John Verco, seconded by Dr. J. M. Dwyer.

A vote of thanks to the retiring members of the council, Dr. S. R. Burston, Dr. F. Ray Hone and Dr. R. E. Magarey, was carried on the motion of Dr. C. T. C. de Crespigny, seconded by Dr. R. A. Southwood. Dr. R. E. Magarey responded on behalf of the retiring members.

SCIENTIFIC.

A MEETING of the Victorian Branch of the British Medical Association was held at the Medical Society Hall, East Melbourne, on May 3, 1939, DR. F. L. DAVIES, the President, in the chair.

Everyday Prescribing.

DR. BYRON L. STANTON read a paper entitled "Some Problems in Everyday Prescribing" (see page 206).

DR. W. J. NEWING thanked Dr. Stanton for his very able elucidation of problems that had worried most practitioners at some time or other. He remarked that Dr. Stanton was particularly able to sift the bran from the chaff and was experienced in the instruction of medical students in therapeutics. Dr. Newing said that the students at the hospitals tended to be more interested in the newer proprietary preparations than in the old and established combinations of drugs; few troubled to taste potassium iodide or learned to use mercury ointment. When a prescription for a sedative cough mixture with a foundation of ammonium carbonate was proposed as suitable, Dr. Newing had at times suggested that the students should go to the dispensary and smell ammonium carbonate to see if it seemed likely to have a sedative effect. He thought that elegant prescribers were in the minority and that most practitioners took little trouble over prescribing. He recounted an incident in which a practitioner, when a pharmacist had communicated with him over the vagueness of a prescription, had excused himself on the grounds that he had a "surgical mind". Dr. Newing said that he had had many inquiries as to how proprietary drugs should be prescribed. It might not be generally known that if the prescription was left without any instructions to the patient, it was customary to dispense a proprietary drug in the original wrappings; otherwise the wrappings were taken off and the new label bearing the instructions to the patient was applied and an additional charge was made for that service.

With reference to incompatibility, Dr. Newing remarked that the inclusion of phenobarbital in a prescription was probably the most common offence; it was often added to mixtures containing potassium bromide or aromatic spirits of ammonia. Those who were so prone to prescribe proprietary drugs needed to be reminded that there were at least a dozen drugs that had been used for generations, familiarity with which was well worth while. He cited an anecdote in which a man who had used the sign for one ounce instead of that for one drachm when prescribing *Liquor Strychninæ* had admitted his stupidity and had light-heartedly announced his intention of adding another notch to his gun. In conclusion, Dr. Newing hoped that Dr. Stanton's address would create further interest in correct and elegant prescription writing.

DR. W. W. OSTERMEYER drew attention to the fact that variations occurred in the British Pharmacopœia as the years went by. He also said that he was in the habit of asking patients to buy and use a minim measure when taking a drug such as tincture of digitalis. In order to be able to check the faithfulness with which a patient carried out his instructions he was fond of prescribing tablets when suitable ones were available.

DR. F. KINGSLEY NORRIS described Dr. Stanton's paper as valuable and timely, and deprecated what he called "blotting-paper therapy" as a great danger for young practitioners, who were apt to ignore simple prescriptions of value and to show a lack of consideration in the matter of the cost to the patient. He added that naturally many proprietary preparations were valuable and could not be replaced by simple prescriptions. His professional association with the late Dr. F. Hobill Cole had been of inestimable value to him on account of instruction at first hand in the old-fashioned use of the art of prescribing. Dr. Norris thought that the habit of quoting from hospital pharmacopœias was a bad one, unless the prescriptions were written out in full; very few medical students seemed to be able to write prescriptions, and many were careless about dosage. Dr. Norris concluded by commenting that children should receive special consideration in the matter of flavour and colour, and that a comparatively small amount of water should be included in prescriptions for them.

DR. R. R. WETTENHALL said that it was tragic to realize the extent of the ignorance of medical students about prescriptions. They did not seem to understand that the formulæ used at hospitals were kept as simple as possible to minimize cost to the hospital. In the out-patient departments the custom was to avoid specifying the total amount of a given mixture to be supplied to a patient, and frequently the number of days for which the mixture was to be taken was noted instead. Such a habit was a lax one, and Dr. Wettenhall believed that proprietary substances were ordered at times to save the writing of a prescription in full or because of lack of confidence in the ability to do so. He instanced calamine lotion as a preparation frequently ordered; few of those who ordered it seemed to be able to tell him what was in it. Dr. Wettenhall stated that when prescribing even pills he liked to specify the ingredients and the quantities of them appropriate to the needs of the individual patient; but he often hesitated to do so because he did not know whether he could rely on the even distribution of the ingredients in the pills, as the art of accurate pill making did not seem to be flourishing. He suggested that the members of the Branch should have another lecture from Dr. Stanton and that the publication of the address as an article in THE MEDICAL JOURNAL OF AUSTRALIA would encourage readers to write better prescriptions.

DR. IVAN MAXWELL stated his conviction that medical students should know the detailed pharmacology of drugs

commonly prescribed. Using ephedrine as an example, Dr. Maxwell said that as well as relaxing the bronchial tubes, ephedrine, in stimulating the sympathetic nervous system, caused inhibition of the intestine and therefore constipation, and inhibition of the bladder, with resultant retention of urine or difficulty in passing urine; by its action on the heart it caused tachycardia; by its action on the wall of the stomach it produced nausea; the sympathetic stimulation also caused tremor. Dr. Maxwell expressed the opinion that the pharmacopœia should be made considerably smaller for medical practitioners and that the detailed action of the drug should be learned rather than the formulæ of a great number of preparations. With reference to the use of alkalis, Dr. Maxwell said that Dr. Stanton had mentioned the usual carbonates; but it had to be remembered that when a bicarbonate was neutralized to a chloride in the stomach the further secretion of hydrochloric acid was stimulated. Bismuth carbonate was a poor neutralizer in comparison with, for example, magnesium oxide, and colloidal adsorbants were not superior to judiciously chosen alkalis. Dr. Maxwell also expressed his extreme interest in the correct selection of iron preparations, but said that it was difficult to be sure of the accuracy of research work and the applicability of the clinical interpretation. He illustrated his remarks by saying that to restore a damaged person it would be necessary to give approximately 100 milligrammes a day of a ferrous preparation or 300 milligrammes of the common ferric constituent of Blaud's pill or 1,000 milligrammes a day of iron and ammonium citrate. These amounts were greatly in excess of the amount of iron metabolized and there was no satisfactory explanation of that fact; the best theory was that a head of pressure of iron was required to stimulate hæmoglobin formation; though the iron content was a mere speck in the huge hæmoglobin molecule, it was essential.

DR. F. L. DAVIES took the opportunity of thanking Dr. Stanton for the work he had done for the British Medical Association, on reference from the Federal Council, and stated that he was the outstanding medical authority in Australia on pharmaceutical matters. Judging by their experience and the disappointing number of entrants for the Embley prize gold medal, it would be difficult to stimulate special interest in prescribing by offering a prize for competition amongst medical students.

Dr. Stanton, in reply, thanked the members for the kindly reception of his address. The prescribing of proprietary preparations had assumed alarming proportions, which were estimated as 75% in the case of younger practitioners and approximately 50% among older practitioners. Many of the proprietary preparations were very useful, such as the hormonal preparations and the glycosides of digitalis; but more reliance should be placed by practitioners on the simple drugs. Dr. Stanton accounted for the popularity of the proprietary preparations on the assumption that their selection was a primitive unconscious surrender to the unknown; under new names many of the simple drugs became respectable. The present trend was only to be expected when only six weeks was allowed in the medical curriculum for *materia medica*; in Dr. Stanton's opinion the subject should be taken with therapeutics and pharmacology in one school and should be given much greater prominence.

Hospitals.

WADE HOUSE.

On the afternoon of Saturday, July 8, 1939, His Excellency Lord Wakehurst, Governor of New South Wales, opened Wade House, a new wing attached to the Royal Alexandra Hospital for Children, Sydney, for the admission of children as intermediate and private patients.

Sir Robert Wade, the President of the hospital, in his opening remarks, said that hospitals were gradually evolving from the original conception of an infirmary for the sick poor only, and the trend of hospital management was to provide facilities for all classes of the community. It was right that everyone should have the right of access to those extensive departments of investigation and specialized treatment which could be found only in a large hospital. It was the accepted practice that the beds set aside for private and intermediate patients should be in a separate building. This assured that no beds in the general side of the hospital could be taken from the poorer people, for which both government grants and voluntary subscriptions from the public were given. The only difference which would exist between patients within the hospital on the opening of the new block was that those who could not afford payment would be treated without charge, while those better situated financially would be called upon to pay according to their means. The treatment would be the same.

Other large hospitals were installing annexes for this purpose. The most outstanding of these in New South Wales had been Gloucester House, in connexion with the Royal Prince Alfred Hospital. Such an annex, in close connexion with a large hospital devoted to one class of work only, as was the Royal Alexandra Hospital for Children, must necessarily offer many facilities for the care of sick children that were impossible otherwise to obtain. These were, first, that on the nursing side it would be possible to secure the services of nurses especially trained in the care of children and, as a branch of this, in special orthopædic nursing. At Collaroy Hospital they had a hospital of 100 beds, of which 80% were reserved for orthopædic cases and where additional training was given to nurses in the care of children with affections of bone, joint and muscles, in sunbaking, and in the care of splints and such appliances that constituted orthopædic nursing as distinct from other work. Again, in the main hospital at Camperdown, of some 360 beds, at least 20% were devoted to sick babies. In consequence there would always be in this block nurses trained and accustomed to the care of sick babies and children, who had the additional certificate from the Tresillian Mothercraft Homes for the care and feeding of the normal baby. They believed that they would be able to provide, combined in one building, all classes of specialized baby and children's nursing. Moreover, young mothers, after leaving maternity homes, might find in the new block a place where, should they have any difficulty in feeding their babies, they themselves could be started on the right way for the care of their normal infants.

Apart from this specialized nursing, a large hospital offered opportunities for special care by the access that was possible to the departments, large and highly developed, for investigation and treatment—the pathology, the X ray and biochemistry departments *et cetera*—and for the immediate treatment by emergency methods, such as blood transfusions and similar methods, which were ready at hand, prepared for use at a moment's notice, and with a highly skilled staff ready to do the work.

In 1932, feeling the possible need of such a department for the hospital, the board of management had set aside some spare beds in a cottage occupied by sick nurses, and the demand that existed for intermediate beds was soon evident—these beds were always filled and there was generally a waiting list. Enlisting the interest of the Hospitals Commission, they had decided to embark on a more ambitious scheme, and, thanks to the help they had thus received, they were enabled to initiate it.

In December, 1937, Lady Wakehurst had been good enough to set the foundation stone of the new building, and they very much appreciated the kindness of His Excellency Lord Wakehurst in consenting to perform the opening ceremony.

Thanks were due to the Hospitals Commission for their collaboration and interest, for it was through them that the board had been able to secure the necessary money to undertake the work. The commission had guaranteed the interest and repayment of the loan if the board should fail to be successful in the enterprise; but the board

trusted that there would be no need to call upon their assistance and that in the future the profits accruing from the block would be a source of considerable revenue to the general hospital.

Sir Robert Wade said that he wished to thank the board of management of the hospital for the honour they had done him in allowing his name to be associated with this new building. He could not say how much he appreciated this honour in connexion with the hospital with which he had been associated in one way or another for over forty years.

The building, together with the ancillary and necessary details, had come from the design of the government architect, Mr. Cobden Parkes, and the officers of his department; the result, both from an architectural aspect and as a specialized hospital, was one of which both the department and the hospital might well feel proud.

Sir Robert Wade went on to say that he wished to express the special thanks of the board of management to Dr. S. W. G. Ratcliff, their chief executive officer. It was due to his deep interest, combined with his wide knowledge of hospital administration and hospital architecture and his practical application of this knowledge, that the efficient lay-out within the hospital had resulted. They were indebted to him for much original work and for appliances that were unique in the hospital. Sir Robert Wade did not know what they should have done without him. He also thanked the matron, Miss Kirkcaldie, and the sister-in-charge of the block, Sister Spencer, for their interest and good taste in the design of furnishings *et cetera*. Before finishing his meed of thanks to those who had taken an interest in the building, he wished to add the name of Mrs. Pratt, better known as an artist under the name of Pixie O'Harris, who had been responsible for some very delightful mural decorations.

There was, too, for the first time in hospital practice in Australia, laid down cork flooring—noiseless, light and comfortable for the feet. This material had been tested over a period of years in Great Britain and had been found to be durable and effective. The ceilings of the rooms and corridors were of sound-proof material and all noise was, as far as possible, eliminated. The operating theatres were air-conditioned, a most necessary feature in this country; but after careful consideration it had been decided that air-conditioning was not necessary for the wards, for there, while allowing for free entrance of fresh air, each room was fitted with an adequate heating system by steam radiation. Those present would notice the observation window in each room in the corridors, whereby the children could be overlooked without disturbance, and during the night-time a switch in the corridor would turn on a light within the room without awakening the patient. In three of the rooms were installed steam kettles, which could be set in operation at a moment's notice in such cases of chest trouble in which a moist atmosphere was desired.

On top of one wing was a play-room, where convalescent children might amuse themselves together, and it was connected with an open-air playground with a sandpit in the corner. The roof garden could be used for sunbaking when it was indicated.

Sir Robert Wade concluded by saying that they had a hospital capable of offering specialized nursing, investigation and treatment for infants and children, and a hospital which they trusted would be found to be of service to the community.

Sir Robert Wade then introduced the Honourable H. L. Primrose, Acting Minister for Health, who said that he was glad to be present at the function, which was another instance of the progress which was being made in hospital work, and indicated the progressive nature and the enterprise of the board of management of the hospital. Those who had known the hospital when it was located in Glebe would realize the great strides which had been made since those days, and he was sure they all rejoiced that the children of the community were now provided for in the way that the hospital offered. It was necessary in the treatment of patients that their surroundings should be bright and happy. It was also necessary that the staff should have the facilities and surroundings which kept them contented and happy, because if they were happy they communicated that to their patients; and he was sure that in this institution would be found all the facilities to provide for the contentment of the staff and for the improvement in the condition of the patient.

Mr. Primrose said that he understood that this was not the only addition which the board of management proposed making to the establishment. They had a programme mapped out for a nurses' quarters and other offices, and it would not be long before they would undertake that work, and he could assure them that they would have the whole-hearted support of the Government and the Hospitals Commission. Permission had been granted for the borrowing of the necessary money, of which the Government would provide half and the other half would be provided by the hospital through their contributions; but they knew the facility which this institution had for raising money, so that they were able to undertake any building scheme. Mr. Primrose supposed it was the appeal of the children which enabled this to be done.

He wished to clear up a doubt which existed in the community regarding the contribution of the Government towards the maintenance of the hospitals and also the amount of contribution which was made by the State lottery. He thought that there was an impression that only part of the money received from that source was applied to the hospitals. Up to June the amount expended by the Government for hospitals generally was £1,341,483—that comprised loan funds £318,556 and revenue expenditure for maintenance and equipment of £1,121,927, of which the amount of £840,000 was proceeds from the State lottery and the balance contributed by the Government. So that they would see that the Government not only contributed the amount it received from the State lottery for the maintenance of hospitals, but provided last year half a million from its own funds.

Sir Robert Wade had referred to the tendency to call more upon hospital services. It was all to the good of the community. They had in the Royal Alexandra Hospital for Children an institution which could provide much more than could be provided in a number of smaller institutions, and with the facilities of transport available it was much better that they should have large centres than small hospitals spread throughout the metropolitan area.

There was one matter which he would like to mention particularly, and that was immunization against diphtheria. As those present knew, the Board of Health had been conducting a campaign for the last two years; there had been various attempts made to belittle that campaign and to disturb the minds of parents. An attempt was being made at the present time to do that, and he wished to say that the Government appreciated the attitude which the Press had taken in regard to that matter. They had not encouraged the opposition; they were doing all they could to discourage it; but if figures spoke for anything it would be clear that opposition to immunization was not justified. Out of approximately 200,000 cases in which immunization had taken place, only 13 cases of diphtheria had occurred. Those figures spoke for themselves, and he hoped that the parents in the community who had not had their children immunized would take courage from those figures and make sure that their children would get the benefit from that treatment.

Mr. Primrose congratulated the board of the hospital on its progress and its future anticipations, and he hoped that it would continue to receive the support from the community which it had enjoyed in the past and that it would be able to realize the plans which it had in hand. He had very much pleasure, as his duty, in asking His Excellency to perform the opening ceremony of the addition.

His Excellency Lord Wakehurst said that he appreciated very much indeed the invitation to open the very wonderful addition to the Royal Alexandra Hospital for Children. His only regret was that Lady Wakehurst could not be present. Ever since she had set the foundation stone of the building eighteen months before, she had taken a very great interest in its growth and, as Sir Robert Wade had said, she came and saw the building before she left

for England in February, and he knew she would be waiting for a letter telling her what the finished building was like, and he would certainly give a very glowing description of it.

He had just been round, and he knew that all present who were going over the building later would agree with him that there could be very few such places so tastefully decorated, so beautifully furnished, with such bright and cheerful rooms and filled with so much ingenious and up-to-date equipment. It was a very great pleasure for him to be present and to have the opportunity of seeing this extension of the Royal Alexandra Hospital for Children, which was doing so much wonderful work. He thought that all would agree that if one branch of social service could be preferred to any other, that which had to do with children perhaps must take first place; and that was so whether they looked at the matter from the human point of view or from the more abstract point of view of society as a whole. After all, there was nothing more important than that the children, who were going to be the grown-ups and citizens of the coming generation, should be as fit and healthy as they could be made. He liked to think that probably thousands of lives had been made happy owing to the treatment they had received in that hospital.

Another reason why he was so glad to be present was because it was Wade House that he was opening, and he was indeed happy that this opportunity had been taken of erecting, of putting on record so to speak, a permanent tribute to the name of one who had given so many years of his life and such devoted service to the hospital and the children of our community.

It was not his business to make a long speech, but to get on with the opening ceremony and give those present a chance of going over the building, with which he was perfectly certain they would be delighted. He had very much pleasure in declaring Wade House open.

Description of the Building.

Wade House, ideally situated in its own section of the grounds of the Royal Alexandra Hospital for Children, expresses the latest developments in hospital planning and equipment. The building is L-shaped, with its two wings (each of four stories) to the north and east enclosing a grass court and garden open to the sunny quarter.

At the intersection of the two wings is the main entrance, from which a one-story section, providing various administrative offices *et cetera* and ambulance entrance, runs in a south-west direction. The essentially horizontal feature of the two wings is relieved by the height of the tower at the junction of the two wings. Indeed, the vertical *motif* provided in the treatment of the brickwork of this tower emphasizes this effect.

The building, of reinforced concrete frame construction faced with bricks of deep cream tint, is most pleasing in its setting among fine large Port Jackson fig and other trees which were on the site and were carefully preserved by skilled planning of the location of the building and route of necessary paths and roadways.

Entering by the wide "In" gateway, a concrete drive extends to the main entrance, over which a hood bearing the name "Wade House", executed in wrought iron (lit up at night by an illuminated panel of amber glass behind it), protects the approach. This approach is paved with squares of buff-tinted scagliola separated by strips of deep green terazzo, which also constitutes the risers of the steps.

The spacious entrance vestibule, which is entered through glass-panelled doors and is equipped with modern furniture, is provided with an inquiry counter for the receptionist on the left, beyond which is the corridor leading to the south-west wing and a telephone bureau. On the right is the elevator and main staircase. This vestibule is floored with tallow-wood parquetry relieved by strips of jarrah. The walls and ceilings are painted a pastel tint of cream and bear murals carried out by Miss Pixie O'Harris. The main tableau at the northern end of the vestibule portrays Jackadgery, a character from Frank Dalby Davison's "Children of the Dark Ages". Here Australian fauna has been illustrated in a clever manner, which has to be seen to be appreciated. Even the directional signs to the various wards take the form in one instance of a traditional signpost, upon which a magpie perches, and in another a rough piece of board nailed to an Australian gum tree, in the branches of which a koala with its young is resting in characteristic fashion. The sign "To the Lounge" is a paraphrase of tired Dick Whittington resting against a milestone; in this, however, the platypus takes the place of the traditional Dick Whittington. A wise owl indicates the lift, beside the floor indicator of which an Australian cockatoo is expressing its mirth. The aim has been to create an impression quite the opposite of that which a child would usually associate with a hospital.

The administrative offices in the south-west wing include a parents' lounge, which is panelled to the full height of the walls with Putts pine relieved by horizontal beads. The floor is of parquetry, and a large three-sash window gives access to a sun terrace set aside for visitors and friends. This lounge is tastefully furnished to harmonize with the panelling.

Next to the lounge is the café, equipped with bright glass-topped tables of various shades with woodwork of a honey shade. As an annex to the café is a servery, complete with electric refrigerator, gas range, steam hot presses, steam-operated boiling water urn, stainless steel sinks and drainers, and electric bread-slicing, fruit juice-extracting and drink-mixing machines.

There is also in this wing the office of the supervising sister and accounts office.

At the end of the wing is the ambulance entrance, which takes the form of a *porte-cochère* with a screen-wall including a large panel of glass bricks. Thus complete protection from the weather and wind is afforded ambulances when bringing patients to Wade House. In close proximity to the ambulance entrance is a clinical examination room with laboratory annex. This is provided for the convenience of medical practitioners who may desire to conduct a clinical examination before the admission of patients to the wards, or the examination of a patient who attends Wade House subsequent to discharge. This room is complete with an office desk, examination table and simple laboratory facilities.

The electric passenger and bed lift is of the most modern type, and incorporates the latest development of motor-generator control. The doors are of the self-opening and self-closing type, operated by the simple pressing of a button on the landing or in the car, and protection is afforded the user of the lift by an ingenious "electric eye", which prevents the doors from closing if the ray of light is interrupted for any reason. The lift is most silent in operation, and in the car is installed a telephone which gives immediate communication with the sister's control station on the ground floor.

One-, two- and four-bed wards are distributed over the ground, first and second floors, and with four exceptions face north or east. They have large three-sash windows, which open onto spacious cantilever balconies, as shown in the illustration. These balconies have been so designed as to capture the whole of the winter sun and allow it to stream into the various wards, whilst at the same time the hot summer sun will be effectively screened from the wards. Protective guards, necessary in a pædiatric unit, have been provided. The ceiling of each balcony is of a pleasing restful shade of green, whilst the floor is of green terazzo. The view from the balconies is that of the sunlit grass court previously referred to, surrounded by shrubs and Lombardy poplars, the latter affording shade in summer but, being deciduous, permit the sun to gain full access during winter.

The wards have floors of cork tiles and ceilings of Donna Conna. Cork tiles have in recent years been extensively used by the leading hospitals in Great Britain, and inquiries show from tests carried out in the National Physical Laboratories in England that it has the wearing properties of English oak. It is pleasing in appearance, being of a warm brown shade, with a strip of cork tiles near the skirting stained a darker shade. It is easily

polished, non-slip, silent and soft to walk upon, and in the event of any damage being incurred the affected tile can be removed and readily replaced by a new one. Donna Conna, constituting the ceilings, is a fibre board imported from Canada, and has been left in its natural state of pale maize tint. It is sound-absorbing. These ceilings and floors, which also exist in the corridors, have resulted in a building remarkably free from noise, so disturbing to the sick.

The walls of the wards are painted pastel shades of maize, primrose and champagne on the three floors, and, combined with the quilts, curtains and screen covers of green, primrose and pink, results in wards most pleasing in appearance.

The lighting of the wards is glare-free. Over the head of each cot is a fixture which throws a shadowless ray upon the ceiling; and this, reflected in the ward, gives a soft yet effective lighting. In this same fixture a small 15-watt lamp controlled by a switch in the corridor enables the nurse at night-time to see the children through a plate-glass observation window in the corridor without the necessity of entering the ward itself. The electric switches are of a special kind, silenced by rubber bushes, and thus avoid the usual metallic sound. In addition to this fixture over each cot there is a reading light, a 32-volt outlet plug for hand inspection lamps, a 240-volt outlet plug for wireless receivers, vacuum cleaners and floor polishers, and an outlet plug to which can be affixed the patient's call switch flexible cord when the child is of such an age as to be able to use intelligently this most desirable accessory. The patients' call system is both visual and auditory. When the pear-switch is pressed by the child a red light appears in the corridor over the door of that particular ward, a numbered light appears on six annunciator panels placed in the following strategic positions on each floor: sister's station, nurses' rest room, dressings room, ward servery, utility rooms (2). In addition, each of these annunciator panels gives out an alternating buzzing sound. Both the lights and sound continue until the call is cancelled, and this can be effected only by pressing a button in that ward where the call originated. The sister at her control station is able to observe the interval between the time that the call is registered and cancelled, and thus has a continuous effective check upon the nursing staff.

Each ward is equipped with a built-in wash hand basin with knee action hot and cold water controls. This feature not only reduces considerably the work of the nurses, but does much to eliminate cross-infection in a pædiatric hospital.

Each ward is equipped with a cot or bed, a cot tray or over-bed table, a bedside locker, a bedside chair, a lounge chair, and a mobile screen. There are also built-in dressing tables and full-length wardrobes. The cots are of "Royal Alexandra Hospital for Children" design, which permit of either or both ends being elevated through a range of heights without the necessity of using wooden blocks under the castors. The cots have been so standardized that mosquito net frames, apparatus for the treatment of fractures, for providing extensions, for suspending steam tents *et cetera* can be readily and easily arranged. The beds are of two types, one of which affords a full range of movement, trunk and/or knees and/or feet of the patient being placed in all possible positions by the simple turning of a crank handle. Such adjustable mattress frames are of considerable value when the Fowler position is required, as well as when nursing patients with cardiac or pulmonary disease.

The bedside lockers in their top compartment provide a swing-out support for a stainless steel wash basin, including soap dish and tooth brush holder. The basin is held exactly in the position most convenient for the nurse, and avoids the common practice of placing the basin either on the top of the locker or on the over-bed table. It also ensures that each patient has an individual basin *et cetera* during his stay in hospital—another factor in eliminating cross-infection. All the furniture is enamelled in "Dulux" of a pale cream shade.

The whole building is centrally heated by circulating hot water at a temperature of 180° F. through a system of radiators. To overcome the disability often associated with such a system, which results in too high a temperature by day and too low by night, each wing of each floor constitutes a separate circuit. At the most distant point of each circuit a thermostat is fitted which maintains a constant temperature of 70° F. in that wing by day and night, regardless of outside atmospheric conditions. These ingenious thermostats transmit electric impulses to an electric motor fitted to the spindle of the valve controlling that circuit. If the temperature tends to rise above 70° F., an impulse is transmitted which causes the electric motor to close the valve slightly and thus restrict the circulation. Conversely, a tendency for the temperature to drop below 70° F. results in an impulse which causes the valve to open slightly. This control of the rate of circulation results in a perfectly uniform temperature at all times. Another thermostat maintains the temperature of the circulating water at 180° F. at all times.

The following ancillary units to the wards are provided on each floor: a lounge hall is at the intersection of the two wings, a sister's control station, a ward servery,

nurses' rest room, dressings room, utility and bathrooms (one to each wing), a cleaner's room, a linen store, a general store, a flower room and blanket cupboards. At the end of the northern wing on each floor there is a special suite of rooms, comprising a bedroom equipped with the same appointments as the wards for the accommodation of a mother, two one-bed wards and a combined bathroom and toilet. In regard to these ancillary units, much thought has been given to ensure the most efficient lay-out of the equipment installed so as to secure the maximum efficiency. The ward servery contains an electric refrigerator cabinet, small gas stove, steam-heated hot presses and serving table, steam-operated boiling water urn, steam-operated utensil sterilizer, stainless steel sinks and drainers, stainless steel refuse chutes and bins and patients' tray rack, electric fruit juice extractor and drink mixers. The floors are of cork tiles, the ceilings of "Acousti-tile". This combination is most effective in sound absorption of a servery, which is one of the chief sources of noise in a hospital unit. In the patients' tray rack, trays are set up with name card upon the admission of the child and remain, with appointments, for the exclusive use of the child during his stay. The trays themselves are of synthetic resinous material incorporating a fabric base. They are of walnut shade, light, silent, unbreakable and unstainable. The trays are handed to the nurses through a service hatch. The food is brought in bulk to the ward serveries from the main hospital kitchen in an electrically heated food box. Into these standard size boxes various combinations of food containers of different sizes and shapes can be fitted according to the requirements of the constantly changing menus. The degree of heat is thermostatically controlled. The great advantage of this system is that one conveyor truck can readily transport six of these food boxes—the total requirements for Wade House—instead of six individual electric food trollies entailing considerably greater expense and a larger staff of porters.

The utility rooms, floored with green terazzo, include, in addition to the usual features, urine test cabinet complete with Bunsen gas burner and a bed pan sterilizer with a capacity of five bed pans at a time. In the bathrooms the baths are raised to avoid unnecessary stooping by the nurses, and free access exists on both sides of the bath. The hot and cold water taps are out of reach of the children. Bathrooms, as well as all toilets, are equipped with patients' call buttons operating in conjunction with the patients' call system.

The sister's control station on each floor is an annex of the entrance hall, and exactly opposite the lift door and main staircase. This permits the sister to have effective supervision of her floor. Her station is equipped with the switches to control all lighting of corridors, balconies, lounge hall *et cetera*, telephone facilities and "poison" cabinet for narcotic drugs. Here also is parked the chart trolly containing the case histories. The corridors at night-time are illuminated by means of small glass panels three feet from the floor.

The eastern wing of the fourth floor comprises the operating theatre block. Here, facing south, are found two large operating theatres, two anæsthetic rooms, sterilizing room, doctors' room and toilet. On the northern aspect are situated the nurses' rest room, change room and toilet, instrument store, general store, dressings preparation room and sterilizing room. The theatres are complete in the minutest detail. The floors are of dark green terazzo squares, separated by brass strips, the walls of semi-glazed tiles of duck-egg green shade, the ceilings are flat-enamelled a pastel shade. The large frosted window facing south is equipped with a Gadsen light-tight blind, which by the simple turning of a handle may be readily lowered. On the wall opposite the window are built-in instrument and lotion cabinets lined with the same tiles as those of the theatre. Tip-up scrub-up basins are provided for the use of surgeons and staff. On a stainless steel panel in the wall there is provided a suction outlet with large interception bottle, a blower outlet, switches for emergency lighting and spare space for control outlets for gas anæsthetics, which later may be piped from a central source. The plants for the suction and blower are placed in the basement of the building, and therefore the usual sound in the operating theatre does not exist. An interception bottle on the suction (providing up to seventeen inches of mercury vacuum) is of two-gallon capacity and is fitted with a special float device which prevents, in the event of the bottle becoming full, any draw-off of the material into the suction lines. The shadowless operating theatre light is of the efficient "Scialytic" type, adjustable in all directions and equipped with auxiliary bulbs supplied from a storage battery and controlled by a special relay mechanism, which results in the auxiliary bulbs immediately lighting up in the event of either a failure of the 240-volt council supply or burning out of the filament of the 240-volt lamp. The basins in the operating theatre, as elsewhere throughout the building, have knee-action controls for the hot and cold water supply. These knee-action controls have been evolved at the hospital. From quick-acting control cocks underneath each basin a short arm ends in a stirrup-like piece into the concavity of which the knee of the surgeon is placed. A short lateral movement of the knee in one or other direction gives a completely perfect control of the flow of both hot and cold water. In addition, each outlet is provided with a control cock, which can be sealed, to permit the adjustment of the flow of water at that particular basin, having regard to its position in the building and the consequential difference in pressure.

The equipment of the operating theatres is of the most modern kind. Stainless steel is used throughout for all table tops, lotion basins and utensils. The operating theatres and ancillary units are fully air-conditioned. The installation is of the compensating type, which provides for a temperature of 12° F. below that of the atmospheric temperature at the time, with a minimum of 70° F. A 55% relative humidity is automatically provided by variation of the absolute humidity according to the operating temperature at any one time. There is included a special ventriculography table to enable this procedure to be carried out effectively. The steam pressure sterilizers are all equipped with recording thermometers whereby on a slowly revolving chart synchronized with the electric clocks they record continuously the actual temperature in the lowest part of the sterilizing chamber. This chart is available to the chief executive officer daily, and gives assurance of positive effectiveness of sterilizers.

On the northern wing of the fourth floor is situated the play-room and open sun roof. The former is a large room with cork-tiled floor and sound-absorbing ceiling, entirely

glazed on the north by large three-sash windows reaching from floor to ceiling. Thus the whole room can be thrown open or closed to a lesser or greater degree according to climatic conditions. Large overhanging eaves on the northern side have been so designed as to permit the winter sun to stream in the whole day from sunrise to sunset, yet the hot summer sun will be screened off the room entirely. The murals on the walls of this play-room, by Miss Pixie O'Harris, are most delightful. Here are portrayed Peter Pan, fairies, monkeys perched on the upper edges of toy cupboards cheekily munching apples or striving to catch butterflies, a little boy and girl in one corner kneeling in prayer, and so on. Each of these dainty drawings bears a simple verse which never fails to attract the interest and cause delight of children. The room is equipped with toys of all descriptions for both sexes of all ages. Tables and chairs are provided for both the larger and smaller children. Here in this particularly sunny room, designed to permit a cheerful atmosphere and hasten convalescence, the children come from the wards and secure that stimulus to appetite and sleep which retention in the environment of their wards would fail to provide. The open sun deck leading off from the play-room is protected from the westerly winds by a wall. The "Neuchatel" paving is painted a restful shade of green. Garden seats to which beach umbrellas can be clipped in summer are provided, as well as a sandpit and drinking fountain. Shrubs in cement tubs add to the attractiveness of this sun deck, from which views over the city and university are obtained.

The tower, containing the various storage tanks and air-conditioning plant and lift mechanism, has been so designed that an additional story, comprising wards, may be added to the building at any time without any dislocation of its operation or services.

Correspondence.

FADS AND FASHIONS IN FRACTIONAL TEST MEALS.

SIR: Although a quarter of a century has elapsed since Martin E. Rehfuss first introduced the fractional tube and five types of gastric response (cephalic and chemical juices and those obtainable after injections of histamine, choline chloride or repeated injections of adrenaline) have been clearly defined in the interval, certain pathologists (biochemists) still overlook the fact that the composition of the gastric contents must vary in accordance with the nature of the meal ingested.

During the past three months patients have been interviewed, the composition and hue of whose test breakfast has varied with the whim or caprice of the individual pathologist.

1. One-fifth of a gramme of caffeine in 300 cubic centimetres of distilled water *plus* three drops of methylene blue solution.

2. Two hundred cubic centimetres of 5% alcohol, to which a few drops of phenolsulphonephthalein solution were added.

3. A hypodermic injection of 0·5 milligramme of histamine acid phosphate.

Although the test meal graphs from one laboratory stated that the test meal was composed of "30 grammes of cereal in 300 c.cm. of water", this caption has been deleted recently, and one learns on inquiry that one drachm of Liebig's extract ("Lemco" brand) in half a pint of water, sodium chloride to taste, and one "Sao" biscuit (Arnott) had been substituted; nevertheless the "beef-tea readings" were superimposed on a "cereal-normal chart".

Since the alcohol test meal acts as an irritant, its action as a secretogogue must be regarded as unphysiological.

Again, although histamine is most probably the most powerful of all gastric stimulants, its action must be abnormal in that it stimulates solely the secretion of hydrochloric acid and not that of pepsin or of the other organic constituents. In spite of the above, this medicament must remain our most effective and useful auxiliary wherewith to clinch a diagnosis of chronic atrophic gastritis.

It is not generally appreciated that the more commonly used test meals (oatmeal, cereal, bread or toast *et cetera*) are very low in their secretogogue effect and thus constitute inadequate test substances for determining the evolution of the changes accompanying gastric activity.

Probably the most efficient test breakfast is that described by Wilhelmj, O'Brien and Hill in *The American Journal of Physiology* of March, 1936. In short, the method is as follows:

1. Forty grammes of Liebig's extract ("Lemco" brand) are dissolved in one litre of distilled water.

2. Add 30 milligrammes of the sodium salt of phenol red dissolved in 33 cubic centimetres of 1/10 normal sodium hydroxide. (Double this amount preferable.)

3. Add 20 cubic centimetres of a 20% solution of sodium carbonate. The solution is now alkaline.

4. Add slowly, with constant stirring, one litre of 1/10 normal hydrochloric acid. The solution is now acid to litmus paper.

5. Allow to stand until a heavy flocculent precipitate settles out.

6. Filter until crystal clear.

This gives two litres, which is ample for use in six tests. The meal should have a titration value of between 11 and 22 cubic centimetres of 1/10 normal acid. If it runs higher than these figures more alkali may be added to bring it within these limits.

It is a matter for the Section of Pathology and Bacteriology, holden under the New South Wales Branch of the British Medical Association, to determine whether a departure should be made in this State from the established "cereal test breakfast"; but it is essential that no change-over should be instituted until the normal standard for the selected test meal has been carefully worked out and approved.

Further, a standardized technique should be adopted; the preparation of the patient and the meal are of the greatest importance, and it is essential that the conditions must be the same for each patient.

As gastro-enterologists refer their patients to practising pathologists with the object of obtaining useful data upon which to institute treatment (and at the same time to confirm the clinical diagnosis), the biochemist on his part must be alive to the fact that the results obtainable from different test meals vary widely and that the "normal standards" for the various meals are not interchangeable.

Yours, etc.,

H. C. RUTHERFORD DARLING.

229, Macquarie Street,
Sydney,
July 17, 1939.

BRITISH MEDICAL ASSOCIATION REFORM.

SIR: Just as a multitude of symptoms comes down usually to one diagnosis, so the foundation of cure of many weaknesses in our Association lies in one remedy, namely, election of our State council by regional representation.

I would like to make this a motion before a general meeting as early as possible, but look first for some expressions of interest and approval in the columns of the journal.

All British Medical Association members could be allotted to local associations if they had not already joined, and certain areas or local associations would be represented by one or more members according to total membership.

Then each association would have some control over its own votes through its own member or members, and they in turn could keep the local association in touch with developments. Local practitioners then would have no cause to say: "What's the use of passing resolutions; it never gets you anywhere."

The shadow of national insurance makes it an urgent matter to establish such an organization in time for the next council elections. Also there are other matters.

In passing, I should like to refer to the excellent letter of Dr. McCristal, on workers' compensation practice, with reference to an employee being inveigled, intimidated or coerced by an employer or an insurance company into seeking attention away from his own doctor-elect.

I suggest all medical practitioners coming across evidence of such send it at once to the general secretary with a request for action. He may be handicapped by lack of actual cases supported by concise evidence.

Yours, etc.,

CRAWFORD MCKELLAR.

81, Glenyr Avenue,
North Bondi,
New South Wales.
July 28, 1939.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Numbers 44 and 49, of July 6 and 27, 1939.

CITIZEN NAVAL FORCES OF THE COMMONWEALTH.

Royal Australian Naval Reserve.

Surgeon Lieutenant Donald Keith McKenzie is promoted to the rank of Surgeon Lieutenant-Commander, dated 1st May, 1939.

AUSTRALIAN MILITARY FORCES.

First Military District.

Australian Army Medical Corps.

To be Captain (provisionally) supernumerary to establishment pending absorption—Cyril Ferdinand Hecker, 6th June, 1939.

Second Military District.

Australian Army Medical Corps.

To be Captains (provisionally) supernumerary to establishment pending absorption—Kenneth James Friend, 17th May, 1939, and Cecil Henry Gilbert, 18th May, 1939.

Australian Army Medical Corps Reserve.

To be Honorary Lieutenants.—Douglas Rodney Hedberg, 23rd March, 1939; Clarence Henry Hughes, 24th March, 1939; Kenneth Coulson Dendy Ward, Robert William Forsyth Gates, Roger Ferris Deck and Ronald Moore, 3rd April, 1939; Arthur Ashley Cooper, 11th April, 1939; Robert Winston Halliday, 21st April, 1939; Leo Michael Dominic Wall, 26th April, 1939; George Scott Cottee, Charles Charman Everingham and Hugh Ross Campbell, 5th May, 1939.

Third Military District.

Australian Army Medical Corps.

To be Lieutenant-Colonel—Major A. H. Green, 4th May, 1939. Honorary Captain W. G. G. Sinclair is appointed from the Reserve of Officers (A.A.M.C.) and to be Captain (provisionally) supernumerary to establishment pending absorption, 7th June, 1939. Captain N. P. Long is seconded for a period of two years from 29th May, 1939.

To be Captains (provisionally) supernumerary to establishment pending absorption—Thomas Ernest Guyatt Robertson and William Leigh Forsyth, 6th June, 1939, and 19th June, 1939, respectively. The provisional appointments of Captains C. P. Manson and F. D. Stephens are confirmed.

Australian Army Medical Corps Reserve.

To be Honorary Captains—Gordon Murray Tallent, 31st May, 1939; Emil Angelo Briglia, 1st June, 1939; Zelman Schwartz, 2nd June, 1939; Matthew Chalmers Patrick, Robert Graeme Orr and Jack McFarlane Fone, 6th June, 1939. *To be Honorary Lieutenants*—Oswald George Gough, 5th May, 1939; Alan George Parker and Frank Williams, 19th May, 1939.

To be Captain—Frederick John Colahan, 8th June, 1939. *To be Honorary Captains*—Hubert Blaubaum, 8th June, 1939; Ian Gideon McLean, William Lincoln Robertson and Gerald George Raleigh Weigall, 14th June, 1939.

Fourth Military District.

District Base: Staff.

Colonel S. R. Burston, C.B.E., D.S.O., V.D., Australian Army Medical Corps, is reappointed Deputy Director of Medical Services, 1st August, 1939.

Australian Army Medical Corps.

To be Major—Captain J. M. Dwyer, 8th June, 1939. Captain (provisionally) G. W. Verco is seconded for a period of two years from 9th June, 1939.

Australian Army Medical Corps Reserve.

To be Honorary Lieutenants—Leslie Carrington Maiden and Alfred Edward Bolt, 9th May, 1939.

Fifth Military District.

Australian Army Medical Corps Reserve.

To be Honorary Major—Honorary Captain H. S. Lucraft, 29th April, 1939. The resignation of Honorary Captain B. W. A. Buttsworth of his commission is accepted, 30th April, 1939.

Sixth Military District.

Australian Army Medical Corps.

Captain (provisionally) C. A. Duncan is brought on the authorized establishment, 29th May, 1939.

Australian Army Medical Corps Reserve.

To be Captain—Bruce Maitland Carruthers, 22nd May, 1939.

Congress Notes.

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

A PROVISIONAL programme has been drawn up for the sixth session of the Australasian Medical Congress (British Medical Association), to be held at Perth, Western Australia, from September 2 to 7, 1940.

Members of congress will, according to this programme, be able to register on Saturday, August 31, and on Monday, September 2. On Sunday, September 1, an official church service will be held. At 11.30 a.m. on Monday, September 2, the President and members will pay an official visit to the trades exhibition and to the hobbies exhibition. In the afternoon the ceremony of the laying of the foundation stone of the new Perth Hospital will be held at 3 p.m.; and at 4 p.m. there will be a reception by the State Government and the University of Western Australia. At 8.30 p.m. the inugural meeting of congress will be held; the Patron will declare the session open, and Dr. D. D. Paton will deliver his president's address.

On the morning of Tuesday, September 3, the plenary session will be held. The subject for discussion will be rheumatism, and Dr. W. S. C. Copeman, of London, will be the principal speaker. After this session the official photograph will be taken. In the afternoon the presidents of sections will deliver their addresses and sectional discussions will commence. Sectional meetings will be held on the mornings of the next three days. No decision has yet been made in regard to the afternoons of these days.

Provision has been made in the evenings for the delivery of a public lecture, the delivery of a surgical address and for the congress dinner and the congress ball. A proposal for the delivery of public lectures in the afternoons is being considered. On the morning of Saturday, September 7, a meeting either of the whole

congress or of the executive committee will be held. There will be a naval and military, a masonic and sectional luncheons.

As announced in a previous issue, the Royal Australasian College of Surgeons will hold its annual meeting in Perth just before congress. This meeting will probably take place on Friday and Saturday, August 30 and 31. The George Adlington Syme Oration will be delivered on the evening of Saturday, August 31.

Obituary.

HAVELOCK ELLIS.

WE are indebted to Dr. R. S. Ellery, of Melbourne, for the following tribute to the memory of the late Havelock Ellis.

Æsculapius has not been a stranger to the Muses. Indeed, medicine and literature have through the ages made several happy marriages. In Havelock Ellis, as in Sir Thomas Browne, their union was particularly felicitous; and Hymen's blessing made Ellis a humanist, a man interested in men and the affairs of men. His interests were as innumerable as his knowledge was extensive. His mind was encyclopædic. Through four score years his curiosity was continually aroused. Culture sat lightly upon him; with the classics at his finger tips he seemed equally familiar with contemporary writers. His tolerance was broad, his taste chameleon. St. Augustine was no more strange to him than Magnus Hirschfeld, nor Roger Bacon than Remy de Gourmont. Krafft-Ebing was at his elbow; Rabelais and Montaigne were ever near at hand. He gleaned from both cloister and clinic; nor was his thirst ever entirely quenched at the Pierian spring. Digging deeply into certain aspects of life, like Browne before him, he touched lightly upon many more, elucidating and adorning with an artistry which, if not always consummate, was at least commendable. He developed a rare insight into the working of men's minds, yet his preoccupation with facts never served to cloud his vision of Utopia. Deeply religious by nature, he early embraced a broad agnosticism, and his writings are pervaded with a delicate scepticism, as though he were always wondering

"Why are we tied to this wheeling globe,
Still to be racked while traitorous Hope stands by,
And heals the wounds that they may gape again."

Henry Havelock Ellis was born in England on the second of February, 1859. His father was an English sea captain; and when Havelock was six years of age he was taken by his father on a voyage to Australia in the care of an Irish nun and a German steward, who in their separate ways helped to educate and satisfy the curiosity of this inquisitive child. He received his more formal education at a private school in London. He became intensely musical and religious, and with the world to conquer he came again to Australia at the age of seventeen and settled for some years as a school teacher in New South Wales. It was in this country that he served his literary apprenticeship. Beauty, born to him in the secret places of the bush, found expression in sonnet and song and in the one novel of his literary career.

London called him back to study medicine at Saint Thomas's Hospital; but pathology could not eclipse his interest in poetry, nor did the fascination of general practice lure him long from literature. Medicine served to enlarge his interest in mankind and to equip him more fully for his subsequent sociological studies. Abnormal psychology became his lodestar, drawing him down the strange by-paths of behaviour. The work of his early maturity was prodigious. He edited the "Contemporary Science Series", writing himself the volumes on criminal psychology and on marital relationships. The "Mermaid Series" of old dramatists also received his editorial care, and the plays of Marlowe and Ford were introduced by charming essays from his prolific pen. Again and again he reaped from the fertile soil of his genius. Scientific essays, contributions to *The Journal of Mental Science* and articles for the literary journals of the eighteen-nineties testified to his deep scholarship and abundant energy. He placed Nietzsche among the household gods; he pleaded for the recognition of Whitman. He defended Thomas Hardy and introduced Huysmans. He condoned Casanova and rescued Restif de la Bretonne from the oblivion into which this "gutter Rousseau" had been cast by a prudish age. His confession of faith he set down in "The New Spirit" and his later heterodoxy in "Affirmations".

The generation which had just condemned Oscar Wilde to penal servitude was hardly likely to welcome Ellis's study of "Sexual Inversion". Author and publisher were prosecuted, and "Studies in the Psychology of Sex", the great and enduring monument of his labours, had to be published outside his own country. In these seven volumes Ellis has brought together all the known facts relating to this vast and fundamental, though largely tabooed, subject. His range is enormous. He skimps nothing. He neither praises nor blames; and where another might moralize, he explains. So skilful, indeed, is his presenta-

tion that not only is there nothing at which to take offence, but, where least expected, beauty and nobility seem to join hands unaware.

To some extent Ellis and Freud are complementary. Ellis was the artist and the scholar, Freud the philosopher and discoverer. Freud's studies go deeper than those of Ellis, but Ellis had the larger knowledge, the broader sympathies. He had a better historical perspective. Things human and divine claimed his attention—Spain, music, folk dancing, dreams, topics of the day—but always he returned to his gospel of social hygiene. He abandoned teaching for medicine and medicine for sociology; but he was a teacher in the larger sense, fluent and inspiring, to the very last, being "eyes to the blind and feet to the lame" in matters of sex; and, humble Licentiate of the Society of Apothecaries though he remained, he achieved a wider healing influence through his books than if his life had been given over to galenicals or spent in the service of the scalpel.

DONALD McLEAN.

We regret to announce the death of Dr. Donald McLean, which occurred on July 23, 1939, at Ipswich, Queensland.

WILLIAM JAMES MAYO.

We regret to announce the death of Dr. William James Mayo, which occurred on July 28, 1939, at New York City, United States of America.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

The undermentioned have been registered, pursuant to the provisions of *The Medical Acts*, 1925 *to* 1935, as duly qualified medical practitioners:

Levi, Rudolph, M.D., 1934 (Florence), Brisbane.
Moore, Reginald, M.B., Ch.B., 1936 (Univ. New Zealand), Innisfail.
McDonald, James Main, M.B., B.S., 1938 (Univ. Sydney), Toowoomba.

SOUTH AUSTRALIA.

The undermentioned have been registered, pursuant to the provisions of *The Medical Practitioners Act*, 1919 *to* 1935, of South Australia, as duly qualified medical practitioners:

Blofeld-Moody, Arthur John, L.M.S.S.A. (London), 1925, M.R.C.S. (England), L.R.C.P. (London), 1925.
Tomlinson, William Frederick, M.B., B.S., 1939 (Univ. Adelaide).
North, William Ian, M.B., B.S., 1939 (Univ. Adelaide).
Lower, Oswald Bertram, M.B., B.S., 1939 (Univ. Adelaide).
Wilkinson, Robert Stuart, M.B., B.S., 1939 (Univ. Adelaide).
Helman, Carl, M.D., 1936 (Milan).

TASMANIA.

The undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Matenson, Maurice, M.B., B.S., 1915 (Univ. Melbourne), St. Helens.
Stevens, James Sydney Tod, M.B., B.S., 1933 (Univ. Melbourne), M.R.C.P. (London), 1936, Latrobe.
Bevan, Louis Lancelot Oxley, M.B., B.S., 1936 (Univ. Melbourne), New Norfolk.

Books Received.

EVANS' RECENT ADVANCES IN PHYSIOLOGY, Sixth Edition, revised by W. H. Newton, M.D., M.Sc.; 1939. London: J. and A. Churchill Limited. Large crown 8vo, pp. 501, with 109 illustrations. Price: 15s. net.

SURGICAL SUTURES AND LIGATURES, by J. Holder, B.Pharm., Ph.C.; 1939. Edinburgh: E. and S. Livingstone. Crown 8vo, pp. 64, with illustrations. Price: 1s. 6d. net.

FAILURE OF THE CIRCULATION, by T. R. Harrison, M.D.; Second Edition; 1939. London: Baillière, Tindall and Cox. Medium 8vo, pp. 516. Price: 20s. net.

DIATHERMY, SHORT WAVE THERAPY, INDUCTOTHERMY, EPITHERMY, by W. Beaumont, M.R.C.S., L.R.C.P.; 1939. London: H. K. Lewis and Company Limited. Crown 8vo, pp. 312, with 106 illustrations. Price: 10s. 6d. net.

HANDBOOK OF BACTERIOLOGY, by J. W. Bigger, M.D., Sc.D.; Fifth Edition; 1939. London: Baillière, Tindall and Cox. Large crown 8vo, pp. 481, with illustrations. Price: 12s. 6d. net.

ÆQUANIMITAS, WITH OTHER ADDRESSES TO MEDICAL STUDENTS, NURSES AND PRACTITIONERS OF MEDICINE, by W. Osler, Bt., M.D., F.R.S.; reprinted from the third edition, with a biographical note by W. Langdon-Brown, M.D., F.R.C.P.; 1939. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 462, with a portrait. Price: 7s. 6d. net.

EPIDEMIOLOGY IN COUNTRY PRACTICE, by W. N. Pickles, M.D., with a preface by Major Greenwood, F.R.S., D.Sc., F.R.C.P.; 1939. Bristol: John Wright and Sons Limited. Demy 8vo, pp. 118, with illustrations. Price: 7s. 6d. net.

THE TREATMENT OF RHEUMATISM IN GENERAL PRACTICE, by W. S. C. Copeman, M.A., M.D., B.Ch., F.R.C.P.; 1939. London: Edward Arnold and Company. Demy 8vo, pp. 284. Price: 10s. 6d. net.

BACTERIA IN RELATION TO THE MILK SUPPLY: A PRACTICAL GUIDE FOR THE COMMERCIAL BACTERIOLOGIST, by C. H. Chalmers, B.Sc., N.D.A.; Second Edition; 1939. London: Edward Arnold and Company. Crown 8vo, pp. 221. Price: 6s. net.

CATALOGUE OF LEWIS'S MEDICAL AND SCIENTIFIC LENDING LIBRARY. PART II: CLASSIFIED INDEX OF SUBJECTS, WITH NAMES OF AUTHORS WHO HAVE WRITTEN UPON THEM; New Edition, revised to the end of 1937; 1939. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 156. Price: 16s. net.

NUTRITION AND THE PUBLIC HEALTH. MEDICINE, AGRICULTURE, INDUSTRY, EDUCATION: PROCEEDINGS OF A NATIONAL CONFERENCE ON THE WIDER ASPECTS OF NUTRITION, APRIL 27-28-29, 1939; 1939. London: The British Medical Association. Medium 8vo, pp. 150. Price: 2s. 6d. net.

A SHORT TEXTBOOK OF SURGERY, by C. F. W. Illingworth, M.D., F.R.C.S.; Second Edition; 1939. London: J. and A. Churchill Limited. Medium 8vo, pp. 727, with 12 plates and 189 text figures. Price: 21s. net.

MEDICAL RESEARCH COUNCIL OF THE PRIVY COUNCIL. SPECIAL REPORT SERIES, NUMBER 234: REPORTS ON BIOLOGICAL STANDARDS. V: VARIABLES AFFECTING THE ESTIMATION OF ANDROGENIC AND ŒSTROGENIC ACTIVITY, by C. W. Emmens. Medium 8vo, pp. 71. Price: 1s. 3d. net.

Nominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Matthews, Robert Frederick, M.B., B.S., 1938 (Univ. Sydney), Royal North Shore Hospital, St. Leonards.
Hurst, Maurice, M.R.C.S., L.R.C.P. (London), L.M.S.S.A. (London), 1938, Branxton.
Harper, Archibald Maclean, M.B., B.S., 1938 (Univ. Sydney), Port Kembla.

The undermentioned have applied for election as members of the Victorian Branch of the British Medical Association:

Appleby, Harold Henry, M.B., B.S., 1925 (Univ. Adelaide), F.R.C.S. (Glasgow), 1930, 36, Brighton Road, St. Kilda.
Marshall, Samuel Simon, M.D., 1937 (Rome), 725, Rathdown Street, Carlton, N.4.

Diary for the Month.

Aug. 8.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
Aug. 11.—Queensland Branch, B.M.A.: Council.
Aug. 15.—New South Wales Branch, B.M.A.: Ethics Committee.
Aug. 16.—Western Australian Branch, B.M.A.: Branch.
Aug. 22.—New South Wales Branch, B.M.A.: Medical Politics Committee.
Aug. 23.—Victorian Branch, B.M.A.: Council.
Aug. 24.—New South Wales Branch, B.M.A.: Clinical Meeting.
Aug. 25.—Queensland Branch, B.M.A.: Council.
Aug. 31.—New South Wales Branch, B.M.A.: Branch.
Aug. 31.—South Australian Branch, B.M.A.: Branch.
Sept. 1.—Queensland Branch, B.M.A.: Branch (Jackson Lecture).
Sept. 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
Sept. 6.—Victorian Branch, B.M.A.: Branch.
Sept. 6.—Western Australian Branch, B.M.A.: Council.
Sept. 7.—South Australian Branch, B.M.A.: Council.
Sept. 8.—Queensland Branch, B.M.A.: Council.

Medical Appointments.

Dr. J. R. Black has been appointed Honorary Visiting Medical Officer to the Collaroy Convalescent Home of the Royal Alexandra Hospital for Children, Sydney.

* * *

Dr. K. B. Burwood has been appointed, pursuant to the provisions of the *Workers' Compensation Acts*, a Medical Referee and Public Vaccinator at Maryborough, Victoria.

* * *

Dr. L. E. Clay and Dr. M. Yuille have been appointed, in accordance with the provisions of the *Workers' Compensation Acts*, Medical Referees at Bairnsdale and Melbourne respectively.

* * *

Dr. A. B. Webster has been appointed Medical Officer of Health to the Kalgoorlie Roads Board, according to the provisions of *The Health Act*, 1911-1937, of Western Australia.

* * *

Dr. H. G. Dicks has been appointed Protector of Natives for the Pilbara Magisterial District, in accordance with the provisions of the *Native Administration Act*, 1905-1936, of Western Australia.

* * *

Dr. M. J. Morris has been appointed Medical Officer of Health to the Wagin Municipal Council, in pursuance of the provisions of *The Health Act*, 1911-1937, of Western Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xvi-xix.

Ballarat and District Base Hospital, Ballarat, Victoria: Radiologist.
British Medical Agency of Queensland Proprietary Limited: Medical Officer.
Department of Road Transport and Tramways, New South Wales: Assistant Medical Officer.
Royal Hospital for Women, Paddington, New South Wales: Resident Medical Officer.
Royal North Shore Hospital of Sydney, New South Wales: Resident Pathologist.
Royal Prince Alfred Hospital, Sydney, New South Wales: Honorary Officers.
The University of Sydney, New South Wales: Post-Graduate Lecturer in Pathology.
Victorian Eye and Ear Hospital, Victoria: Resident Surgeons.

Medical Appointments: Important Notice.

Medical Practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
New South Wales: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
Victorian: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
Queensland: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
South Australian: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
Western Australian: Honorary Secretary, 205, Saint George's Terrace, Perth.	Wiluna Hospital. All Contract Practice Appointments in Western Australia.

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